

Volume 5
Issue 10

£1.90

RISC USER

The magazine and support group
exclusively for users of the Archimedes

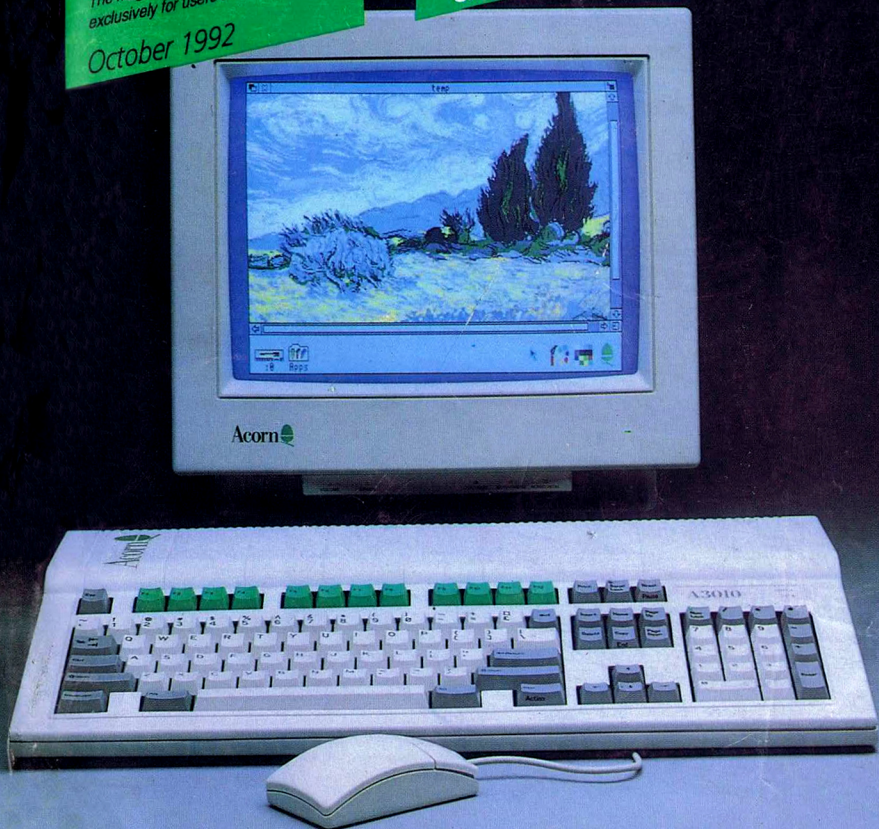
October 1992

Virus Update

Jello and the Art of 3D Graphics

ArtWorks Review

Choosing the Right Monitor



Major New Releases from Acorn

ISSUE

10

VOLUME 5

OCTOBER 1992

CONTENTS

FEATURES

Major New Releases from Acorn	8
Virus Update	17
Jello and the Art of 3D Graphics (Part 1): Blob	25
PC Questions and Answers	32
Into the Arc: Hard Disc Management	38
Edit and DeskEdit Hints	43
The 80 Column	45
Creating Decorative Corners for Impression Junior	46
Using ANSI C (Part 14): Writing Relocatable Modules in C	49
C Notebook: Hints and Queries	53
Choosing the Right Monitor	60

UTILITIES AND APPLICATIONS

Mortgage Term Analyser	14
Wordsearch Creator	31
Basic Program Indenter	31

REVIEWS

Drawing the Professional Way	19
Neural Computation: A Beginner's Guide	24
PenDown Plus	33
Turbo Printing with the BJ-10e Printer	42

REGULARS

News	5
RISC User Disc Contents	36
Points Arising	40, 56
Write-Back	54
Hints and Tips	57
Personal Ads and Advertisers' Index	66
Technical Queries	67

RISC
USERTHE ARCHIMEDES
MAGAZINE AND
SUPPORT GROUP

RISC User is published by
RISC Developments Limited.

Co-Editors:

Dr Lee Calcraft, Mike Williams

Assistant Editor: Kristina Lucas

Technical Editor: Mark Moxon

Production Assistant: Sheila Stoneman

Advertising: Sarah Shrive

Subscriptions: Sue Baxter

Managing Editor: Sheridan Williams

All rights reserved. No part of this
publication may be reproduced without
prior written permission of the Publisher.

The Publisher cannot accept any
responsibility whatsoever for errors in
articles, programs or advertisements
published. The opinions expressed on the
pages of this journal are those of the
authors and do not necessarily represent
those of the Publisher, RISC Developments.

RISC Developments Ltd. ©1992
117 Hatfield Road, St Albans,
Herts AL1 4JS.

Printed by Arlon Printers

ISSN 0966-1913.



Major New Products from Acorn

There is so much to talk about this month that it is difficult to know where to start. Acorn is hoping to achieve a major impact with its new RISC OS systems (no longer called Archimedes as such), particularly with the A3010 which is aimed firmly at the mass consumer market. There are new educational machines, upgraded replacements for the existing A5000, new Acorn networking standards, and (for something completely different) the Acorn Pocket Book. Such a comprehensive set of new products shows that there must have been much activity and late nights at Acorn over recent months.

All the new systems (except the Pocket Book) are full RISC OS Desktop machines featuring RISC OS 3.10, which is now available to all Archimedes users. This means that all the power of a RISC OS system can now be had for as little as £499 inc. VAT - quite something. We have included a five-page feature on the new systems in this issue, so please turn to those pages to find out more.

Although there is nothing particularly revolutionary about these new RISC OS systems, the fact that Acorn can now provide an integrated range of products from the entry level A3010, through the A3020, A4000 and up to the A5000 means that Acorn now has a powerful product line up for the lower and middle market ranges. That has to be good for Acorn, and for all users of Acorn computers. There is now an obvious gap at the top end, where the A540 model continues (albeit reduced in price), so maybe we can expect something really revolutionary from Acorn next year to address this.

RISC User

Here at RISC User we also have many exciting new developments lined up. This is the last issue of volume 5, and a full printed index to this will be included free with RISC User 6:1. We have also compiled a Volume 5 Special Disc (following our similar discs for volumes 3 and 4), and this will be available from 1st October to subscribers at the same low price as last year of just £4.95 inc. VAT until 31st December 1992.

Discounts to Readers

From 1st September we shall be offering discounts to RISC User subscribers on all RISC Developments' own products, of at least 15% on software, and 5% on hardware. In some cases discounts may be higher. Details of discount prices will be included with each issue of RISC User. With a growing range of products from RISC Developments, these special prices can easily pay for your RISC User subscription in the course of a year.

New Book on the Wimp

In October we expect to publish a major new book, **Wimp Programming for All**, which we hope to have available by the time of the Acorn User Show. At just £12.95 this book will provide comprehensive coverage of Wimp programming with many examples and demonstrations. The book and accompanying disc will be available as a special offer to RISC User subscribers.

DeskEdit and ChartWell Upgrades

We shall also be releasing **DeskEdit** version 2, with many significant and major extensions and improvements, and **ChartWell** has also been updated as promised to handle negative values and provide a number of other minor enhancements.

Full details of all these new developments appear on other pages in this issue. However, that's not all. Further new products are expected before the end of this year, all at discounted prices to RISC User subscribers. Together with all the help and up to date information provided in RISC User every issue, there is no better reason for ensuring that you renew your subscription when due as promptly as possible.

Acorn User Show

The Acorn User Show will be the ideal place to see the new Acorn machines, and visit the RISC Developments stand (stands 20/21) where we expect to have ready all the new products referred to above, and more besides.

M.W.

RISC User Volume 5 Special Disc

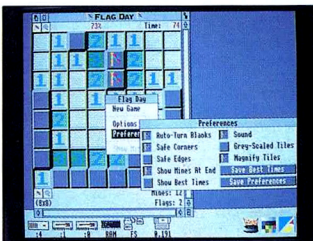
This month we are celebrating the successful completion of the fifth year of publication of RISC User magazine and the start of Volume 6. To mark the occasion we are once again releasing one of our highly popular special discs, this time for Volume 5. The Volume 5 Special Disc contains a selection of the best items published throughout Volume 5, updated and improved where appropriate, plus several new and specially written items. Even if you have previously obtained some of these items, the whole disc at just £4.95 inc. VAT offers exceptional value for money - see for yourself:

High Quality Clip Art

Two Draw files containing a selection of high quality clip art. Included are dozens of arrows and various flashes and borders for use with a wide range of applications, particularly DTP.

Flag Day

A new and addictive Desktop game in which you must use logic to find mines in



a minefield in as short a time as possible. Highly addictive, and extremely well implemented, with many user selectable features such as difficulty levels and a high score table.

Tools for Draw

A specially written application, combining two programs from Volume 5, which allows various shapes to be created in Draw that are hard to achieve with Draw itself. Lines, arcs, polygons, sectors and boxes can now all be drawn with ease, and imported into Draw and other suitable applications.

Telephone Call Coster

A fully multi-tasking application designed to provide a quick and easy way to cost telephone calls. Both national and international calls are catered for and the charges can be edited to provide maximum flexibility for the future.

Producing a Street Map Using Draw

This is another enhanced application from Volume 5 which enables professional looking street maps to be generated using Draw. The original application has been updated to allow dotted roads to be included to signify pedestrian areas, and roundabouts can also be created.

File Plus

A handy Desktop application that allows you to datestamp a file, change its file-type, and open directory viewers for the printer and serial ports.

New Outline Fonts

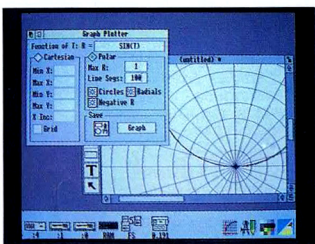
Two fonts, Mercury and Military, for use with any applications that use outline fonts. Both fonts are fully scaffolded and hinted, and contain definitions for the international characters in the Latin1 character set.

Module Information Application

An application which displays details of any RISC OS modules which are dragged to it, so that you can tell a module's version number at a glance without having to load it or leave the Desktop.

Graph Plotting Application

This application combines and updates two previously published items to provide full plotting of both Cartesian and polar graphs in the form of Draw files, all using an intuitive Desktop window.



Mortgage Term Analyser

A highly topical application which displays repayment mortgage details in a graphical form, showing how you can save money in the long run. This is a full mortgage management system which allows the user to determine many options in the analysis of the resulting graphs.

Basic Program Profiler

This application helps you to identify the performance bottlenecks in your Basic programs. No longer will you be halving the time one procedure takes only to find that it shaves a measly one percent off the total execution time of your program.



Desktop Character Rulers Application

This application allows two rulers to be displayed on the Desktop to enable sequences of characters in the system font to be measured very easily.

Music

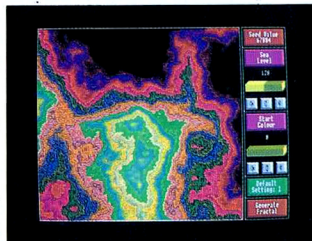
A transcription of Komm, Jesu, Komm by J.S. Bach, in the form of a Maestro file - this is another new item, previously unpublished in RISC User.

Mouse Pointer Controller

This application enables movement of the mouse pointer to be constrained in either the horizontal or vertical directions, useful for drawing perpendicular lines in Draw, for example.

Random Fractal Generator

A very fast fractal generator, previously unpublished, which generates an endless variety of patterns, all at the touch of a mouse button.



ArcScan Index

to RISC User Volume 5.

RISC User Volume 5 Special Disc is available on Special Offer to members for 4.95 inc. VAT. Stock Code PV5S. P&P£1 Offer available only until the 31 December 1992. Normal price will be 9.95 inc. VAT to members (£14.95 non-members).

• News • News • News • News

NEW MACHINES FROM ACORN

STOP PRESS - Acorn has announced a whole range of new machines and products. See the preview elsewhere in this issue for more details.

A NEW IMAGE FROM PALETTE STUDIO

Palette Studio, a new company on the Archimedes scene, is finalising its first major product, *Imagery*. This will be a fully RISC OS compliant art package that allows mode 15 screens to be created from within the Desktop. Details of Imagery's specification were not available at the time of going to press, but Palette Studio said it "contains a whole host of powerful features" to compete with Revelation 2. The projected price is "under £100", and Palette Studio hopes to be selling Imagery over the counter at the BBC Acorn User Show in mid-October. Another product which is in the very early stages of development is *Visionary*, a comprehensive image processing package which will be based on the specification of *PhotoShop* on the Macintosh. Contact Palette Studio at Unit 6C/6D Belgic Square, Padholme Road East, Fengate, Peterborough PE1 5XF, tel. (0733) 53355.

ACORN'S PEARLS OF WISDOM ON CD-ROM

Acorn's RISC OS technical documentation is being released on CD-ROM by Emerald Publishing. The CD-ROM, which will hopefully be available this autumn, will contain the following complete manuals: RISC OS 2 and 3 PRMs; DDE, C and Assembler manuals; BBC Basic manual; RISC OS 2 and 3 User Guides and Applications Guides; Acorn Technical Publications Style Guide; RISC OS Style Guide; MIDI Guide; I/O Module Guide; and the TCP/IP documentation. The text is identical to the Acorn printed manuals, and the CD-ROM provides powerful accessing software with comprehensive search routines, a note taking facility, user-definable bookmarks and the option to view several pages from any manuals simultaneously. The price for the CD-ROM will hopefully be £99 ex. VAT with a discount for registered Acorn developers.

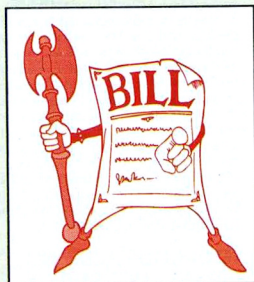
Another new product from Emerald is *DrawBook*, which allows users to print books made up from multiple Draw files. Each page is a Draw file which means that books can be assembled cheaply using Draw and Edit; Emerald says this application should appeal to those who need a cheap DTP system. *DrawBook* costs £15 ex. VAT from Emerald Publishing, 166 Shelford Road, Trumpington, Cambridge CB2 2NE, tel. (0223) 840138, fax (0223) 844652.

PC CARD GETTING BETTER ALL THE TIME

Alph One's 386 PC Card (see RISC User 5:7 for a full review) seems to be selling well, and to show that Alph One has been heeding customer feedback, it is sending out the fifth release version of the PC Card software (version 0.94) to registered users - so if you haven't sent your registration card in, make sure you do to get the software upgrades. Enhancements include much improved CD-ROM support and a better VGA emulation, and the upgrade is free to existing users. Release 1.00 of the software will hopefully be released over the autumn, and this will contain support for networking via LAN adaptors and Novell Netware, as well as enhanced drivers for Windows 3.0 and 3.1. These new drivers will effectively turn the Archimedes with PC Card into a 20MHz 386 PC with an excellent hardware graphics card - which happens to be an Archimedes. Alph One is very keen to express its gratitude to all those who have bought a card and reported their findings, as this has enabled it to update the software to

PAINT IT MATT BLACK

Image Club Graphics Inc. of Canada has been producing high quality clip art for PCs and Macs for a number of years, and now its DigiArt collection has been converted for the Archimedes by Matt Black. There are 23 volumes of clip art in the collection, and each volume costs £29.95 for the Arc (compared to £79.95 for PCs and the Mac). The clip art is compatible with all drawing and DTP packages, and the variety of subjects is very wide. An Image Club catalogue which contains reproductions of all the images in each volume is available for £7.95 inc. p&p, and this will then allow you £5 off your first purchase. Contact Matt Black at P.O.Box 42, Peterborough, Cambridgeshire PE1 2TZ, tel. (0733) 315439 for more details.



Friendly clip art from the Image Club

TWO PLUS TWO EQUALS TEN OUT OF TEN

Triple R Education, the educational wing of The Fourth Dimension, has announced a new range of educational packages called *Ten out of Ten*. The first package is called *Ten out of Ten: Maths (Number)* and contains six educational games which aim to cover some essential parts of the level set out in Attainment Target 2 of the National Curriculum. It costs £25.95. The next *Ten out of Ten* pack will be *English*, and further details are available from Triple R Education, 1 Percy Street, Sheffield S3 8AU, tel. (0742) 780370.

MEET THY MAKER

The *Archimedes Game Maker's Manual* is a new book from Sigma Press. Unsurprisingly the book explains a number of techniques useful when programming games, and it retails at £14.95. We hope to publish a review next month, but in the meantime details can be obtained from Sigma Press, 1 South

• News • News • News • News

Oak Lane, Wilmslow, Cheshire SK9 6AR, tel. (0625) 531035, fax (0625) 536800.

MULTIMEDIA BECOMES REALLY USEFUL

APA Multimedia has announced its first CD-ROM for RISC OS, called *The Really Useful CD-ROM - Vol.1*. The CD-ROM contains megabytes of clip art in Draw and sprite file formats, along with sound samples and a variety of applications. The CD-ROM costs £49 from APA Multimedia, Unit 8, Henley Business Park, Trident Close, Medway City Estate, Strood, Rochester, Kent ME2 4ER, tel. (0634) 295222, fax (0634) 710193.

SIMPERING SIMULATION

ArchSimp is a new analogue simulation package from Mijas Software. The user can create simulation models using a suite of Desktop tools, and theoretical simulation results can be obtained without the need for expensive hardware. For example, you could simulate an internal combustion engine, or a robotic control system, all with the one application. ArchSimp costs £50 for the full version, with a demonstration version available for £5. Upgrading from the demonstration to full versions costs £45, and all prices are inclusive of VAT and p&p. Contact Mijas Software, Mijas, Winchester Road, Micheldever, Winchester, Hants SO21 3DG, tel. (0962) 89352.

PERFIDIOUS ALBION 1, CRYSTAL HOUSE 0

For all you news editors who have trouble thinking up witty puns for each item, the curiously named *Perfidious Albion Inc.* seems like a godsend. This new games company has just announced the imminent release of *Albion*, the "ultimate adventure system for the Archimedes". The initial package will consist of the Albion adventure application, and a sample adventure entitled *The Search for Crystal House*. Soon after this the Albion adventure compiler (called ALC) will be released, allowing adventures to be created in a fully Albion compatible format. Despite the strange names, the features sound most impressive, with a capacity for over 250 million rooms and objects, high quality sound and graphics capabilities and full compatibility with the Desktop. For further information, contact Perfidious Albion Inc. at 65 Salisbury Avenue, St Albans, Herts AL1 4TZ.

NEW GAMES HOUSE HOLDS THE MEANING OF LIFE

A new games company, called Software 42, has announced its plans for a host of

the present stable version. Contact Aleph One at The Old Courthouse, Bottisham, Cambridge CB5 9BA, tel. (0223) 811679, fax (0223) 812713.

WHY AYE, LONGMAN!

Longman Logotron has just released *Geordie Racer* for the Archimedes range. The software is aimed at 7-9 year olds, and is based on the BBC TV program *Look and Read: Geordie Racer*, which is due for its next broadcast in Spring 1993. The program is basically a colourful adventure game, and involves a rather surreal plot in which you must play detective and find some stolen treasure whilst trying to avoid evil Baz the crook - I can't wait for the TV programme!

Meanwhile Longman has updated its multimedia application *Magpie* so that it can handle Acorn Replay video sequences. Acorn Replay (see the news section in RISC User 5:7) allows films to be displayed at 25 frames per second without expensive hardware, and means multimedia 'books' can really come alive. Magpie also supports CD audio, allowing sounds and images to be combined in more sophisticated ways than before. Magpie remains at the same price of £59 ex. VAT, with a free upgrade for existing users. Finally, the long-awaited Eureka spreadsheet has been put back until the end of September, but even this is a tentative date. For more information contact Longman Logotron, 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS, tel. (0223) 425558, fax (0223) 425349.

WRAP A NETWORK CABLE ROUND THE OLD OAK TREE

Oak Solutions has launched a new networking system for the Archimedes range called *ClassNet*. The interface uses industry standard Ethernet components and can be connected to standard 'thick' or 'thin' Ethernet cabling, or can be used with fibre optic cables. The firmware provides an interface that is identical to Econet, so anyone familiar with Econet does not have to learn a new system; also *ClassNet* is compatible with existing Level 4 file servers and printer spoolers, but the big advantage over Econet is the data transfer speed - machine to machine transfer is at 600K per second, which is almost twice the speed of an ST506 hard disc, and 40 times faster than Econet. Apparently these are genuine figures rather than peak figures, which is what manufacturers normally quote. *ClassNet* allows clusters of machines to be created on a larger local network, and allows existing Econet networks to be connected via gateways, thus reducing the amount of replacement necessary in upgrading a network system. *ClassNet* interfaces cost £149 each to education (£199 otherwise), and a four station *ClassShare* cluster costs £795 (to education) if you already have an A5000 with hard drive to use as a server, or £995 (also to education) including 50Mb external hard disc. For the hard facts, contact Oak Solutions at Suite 25, Robin Enterprise Centre, Leeds Road, Idle, West Riding of Yorkshire BD10 9TE, tel. (0274) 620423, fax (0274) 620419.

SEQUEL FEVER: THE FIFTH DIMENSION?

The Fourth Dimension, games creator par excellence, has taken a tip from Hollywood and released sequels to two of its existing programs. *Saloon Cars Deluxe* is an enhanced version of *Saloon Cars* (uncannily enough) which contains a large number of features to entice you to use your computer for joyriding rather than your neighbour's Golf GTI. Apparently it still isn't quite as good as a drive in a real Sierra Cosworth, but existing owners can upgrade for half the price of the new version (£17.50) by sending back the entire pack along with payment. The new version costs £34.95 to first time

• News • News • News • News

drivers. The other sequel is imaginatively called *Neveryon II* (no points for guessing the name of the original), and yet again has a number of enhancements that will hopefully make games junkies beg for more. The major enhancement is the addition of a two player mode, and all this is available for £25.95 from The Fourth Dimension, 1 Percy Street, Sheffield S3 8AU, tel. (0742) 700661 or 769950.

CAN YOU DIG IT?

Sherston Software has released *Arventure II- The Egyptians*, the second in its series of archaeological adventures, the first of which was *Arventure - The Romans*. The latest adventure is aimed at second and third year juniors, who (in the adventure) are given the opportunity to join an archaeological dig in Giza, Egypt to see what they can find hidden beneath the sand. The package includes a wealth of resource materials such as clip art in Draw file and sprite format, and costs £29.95 ex. VAT (site licences are available too). Sherston has also announced a second collection of high quality clip art from artist Bob Barnett, entitled *Food for Thought*. The Draw files cover a wide range of foods (fruit, vegetables, meats, fish and poultry) as well as examples of cooking equipment and appliances. The price is £15.95 ex. VAT, for which you also get a free site licence. Finally from Sherston is the announcement of *!Help 3*, a simple introductory book and disc for those getting to grips with RISC OS 3. The same simple approach to that used in *!Help* (the companion for RISC OS 2) is followed, and the package should cost around £10 when it is released in September. Contact Sherston Software Ltd. at Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH, tel. (0666) 840433, fax (0666) 840048.



Recognise this Egyptian?

VECTOR UPDATE

Version 1.02 of Vector (see review in RISC User 5:9) has now been released by 4Mation. The most important change is that the *Text to Path* facility now works with RISC OS 2, in response to requests from customers who were not too keen on having to upgrade to RISC OS 3. An additional facility allows the creation of mask substitutes which, unlike Vector's own masks, are renderable by other applications. Existing owners of Vector can upgrade to the new version by returning their Vector application disc to 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA, tel. (0271) 25353, fax (0271) 22974.

ACORN HEADS EUROPEAN PROJECT

Acorn is to be the co-ordinating partner in a new project set up by the Commission of European Communities. The ESPRIT project (European Strategic Programme for Research into IT) is being called Portable Workstation for Education in Europe, or POWER for short. Along with a penchant for catchy acronyms, the project hopes to design and prototype a low cost, high performance portable computer for use in education and training markets, and at the heart of the computer will be a processor from ARM Ltd., in which Acorn has a large stake. The POWER project, which brings together a number of companies from Europe, will last for 36 months, and it is the first European-wide project for which Acorn has taken overall responsibility. Bon chance!

new games to be available for the BBC Acorn User show in October. *Ixion* is a 3D vector graphics adventure based on a futuristic Earth; *Raw Power* is a beat-'em-up game with a wide range of fighting moves; *WolfPack* is an original flight simulation with a set of challenging missions; and finally *LandBuild* allows fractal landscapes to be generated in the Desktop. For more information write to Software 42, 109 Ferry Road, Hullbridge, Hockley, Essex SS5 6EL.

SERIOUSLY MULTI-TASKING

Serious Statistical Software has announced multi-tasking versions of two of its products. The enhanced version of *FirstJR* is available now, and the full *First* package will be available in about two months' time. The prices for the multi-tasking versions are expected to be about £50 more than those for the non-multi-tasking versions (which will still be available). This makes the new version of *FirstJR* about £105, and further details are available from Serious Statistical Software, Lynwood, Benty Heath Lane, Willaston, South Wirral L64 1SD, tel. 051-327 4268.

WHAT'S IN A NAME?

Club A3000, the independent user group for Acorn RISC machines, has changed its name to *The ARM Club*. The club itself has not changed though, and still organises a number of courses and events, including The ARM Club Open Day at Mill Hill School, The Ridgeway, Mill Hill, London on Sunday, November 15th 1992. Admission is £1 for adults, 50p for children. For details on the open day, contact Bruce Dickson on 081-959 3321, and for membership details, write to Mark Watts, Membership Secretary, 84c Boston Road, Croydon CR0 3EE.

MOLECULAR MODELLING FROM ARACHNE

Arachne Software is about to release a molecular modelling package aimed at the educational market. Molecules can be designed, edited and animated, and can be saved as Draw files for use in DTP packages. Molecular structures can also be optimised in accordance with chemical and physical theory. The whole package, which includes a number of example molecules, will cost around £50, with supplementary discs containing extra structures for around £10 each. A demonstration disc is available for £5 (which is discounted from the full package if you buy it) from Arachne Software, Orchard Cottage, East Morden, Wareham, Dorset BH20 7DL.

Major New Releases from Acorn

Facts and first impressions from Mark Moxon and Mike Williams.

Acorn Computers has announced a wealth of new products for the autumn, and while there may be no major surprises or revolutionary developments, the impact of the new product range on the consumer and educational computer markets could be considerable. In this month's five page feature we focus on the more significant of the new releases. We will also be reporting in much more detail on these products in future issues of RISC User.

Foremost among the new products is a range of new A3000 systems: the A3010 targetted firmly at the consumer market, and the A3020 version aimed squarely at educational users, both in a number of different packages. The new A4000 provides similar package to

the A3020 but in a three-box A5000 style arrangement. All these systems feature a new ARM250 chip.

Acorn has also upgraded the A5000, the present model being replaced by two new versions: the A5000 2MB HD80 and the A5000 4MB HD120, with 80Mb and 120Mb hard discs respectively. The new HD80 version is £100 less than the original A5000, and the HD120 model with 4Mb of RAM weighs in at just £1599 ex. VAT.

All the new systems referred to above come complete with RISC OS 3.10, and this version of RISC OS is now available to all existing Archimedes users as an upgrade. The new style mouse, introduced on the A4, is now standard on all systems.

Acorn has also announced a new networking standard, AUN (Acorn Universal Networking), as part of its move towards adopting the Ethernet standard for all RISC OS systems, while still maintaining compatibility with its own low cost Econet network.

Finally, Acorn has also announced a completely different machine, the Acorn Pocket Book, based substantially on the Psion series 3, but with Acorn specified software. This costs around £200.

Details of all these new releases are covered in the following pages. All new products, including RISC OS 3.10 upgrades, are scheduled to be available from the beginning of September.

Acorn's New A3000 Range and A4000

Amongst the wealth of new products released by Acorn this autumn, the updated, revitalised A3000 series (plus the A4000) must be the most important and significant development. However, the range of new machines may seem confusing at first, so let's see what is happening.

ARM250

At the heart of the new A3000 range is the ARM250. This is an integrated chip comprising ARM2 processor, VIDC (video controller), MEMC (memory controller), IOC (input/output controller), and PC bus interface (previously a set of four separate chips). The processor operates at 16MHz with a performance of around 7MIPS. ARM Ltd., the designers, claim that the ARM250 offers performance 1.4 times that of a 386DX running at 33MHz. The ARM250 thus clocks in somewhere between the ARM2 at 4MIPS and the ARM3 rated at 13MIPS.

The ARM250 is based on four ARM macrocells (ARM2 CPU, MEMC1, VIDC1, IOC1) providing a direct interface to DRAM

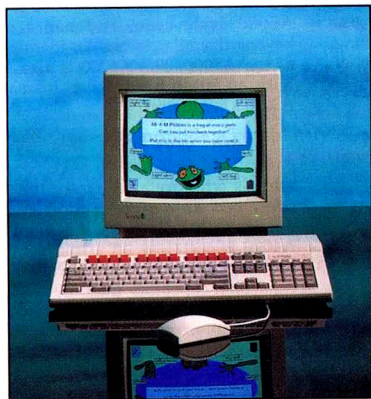


The new A3010 for the consumer market

(dynamic RAM) and ROM with support for memory mapping and protection, bit-mapped displays with integral palette, and on-board video and stereo sound digital to analogue converters (DACs). ARM Ltd. says that the ARM250 has been developed as a

Major New Releases from Acorn

direct response to Acorn's need for a low cost power house for its new machines.



The A3020 aimed at education

MOTHERBOARD

All the new A3000 style systems use the ARM250 mounted on a newly designed and sparsely populated motherboard. The new board design accommodates the power supply as well as all interfaces (including a single mini-expansion slot), and fits in a totally new style of casing (see illustration). All the connections fit along the rear (see fig. 1), with a high density floppy disc drive mounted to the right (seen from the front), and a recessed reset button to the left. The entire system is now fully screened to meet international standards on interference from RF radiation, but this does, of course, add to the weight.

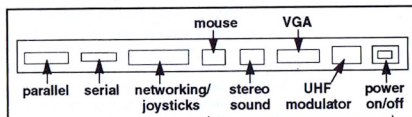


Figure 1. Rear connectors on new A3000 series

THE NEW ARM250 MODELS

There are essentially three different ARM250 models, with a number of variants in each case. The A3010 and A3020 share the same new style case (combining motherboard

and keyboard). The A4000 has the same components but is packaged up as a three box system (similar to the A5000). All models run RISC OS 3.10, and thus provide the same powerful Desktop environment as the A5000.

THE A3000 SYSTEMS

The A3010 is the new consumer model, and is finished in a warm grey case with green function keys - the result, apparently, of Acorn's market research. This model features 1Mb of RAM (upgradable to 2Mb) and comes with twin joystick ports (suitable for standard Commodore and Atari style switch joysticks). The A3010 also has a built-in TV modulator. It has no hard disc interface, but an IDE or SCSI hard drive could be added in conjunction with a suitable interface.



The A4000 in its Home Office guise

This machine is being sold in two packages. The *Family Pack* comprises an A3010 with software pack including Minerva's Easiword word processor, Quest for Gold (game) and supporting audio cassette tapes at just £499 inc. VAT. The *Learning Curve* version provides the same machine and software as above, but also adds the Genesis Collection, the PC Emulator (now called PCSoft) and DR DOS 6, together with an Acorn standard colour monitor (with a new tilt and swivel base) all for £799 inc. VAT.

Major New Releases from Acorn

The new A3020 uses the same casing as the A3010, but in cream with red instead of green function keys. It has 2Mb of memory expandable to 4Mb, built in IDE hard disc controller, and a new standard networking socket in place of the twin joystick ports of the A3010. Missing is the TV modulator of the A3010.

Acorn says this system has been designed primarily for the needs of the educational market. It will be available in two versions, with and without a 60Mb hard disc drive. It will again be supplied with an Acorn standard monitor, but a multiscan monitor will be an alternative for an extra £50 (plus VAT).

Acorn also says that the existing A3000 will continue to be supplied "while there is demand" (at the new price of £525 ex. VAT), but it seems very likely that the attractions of the new machines will rapidly cause the demise of the old A3000. This system's only merit, in comparison with the new machines, is that it can be upgraded with the faster ARM3 processor, but it doesn't have the high density floppy drive of the new systems, or the new networking capability.

A4000

The last model to be launched as part of this series (though it is something of a

hybrid) is the A4000. This packages an A3020 in a three box configuration, like the A5000. The motherboard fits in a slim height A5000 style case, and has a separate keyboard similar to but not identical to that of the A5000. The A4000 is also supplied with an 80Mb hard drive, instead of the A3020's 60Mb unit.

Acorn says that this system is particularly aimed at the needs of secondary schools who prefer the industry standard three box approach to their computing needs, rather than the A3000 style. The A4000 is certainly an attractive and slim looking system, but it has no more expansion capability than the A3020, so no ARM3, and no expansion other than the single mini-expansion slot. There is also an A4000 *Home Office* package with EasiWriter word processor, Desktop Database and optional inkjet printer.

With five different systems now slotted in below the higher specification A5000, Acorn now has a highly competitive range of 32-bit systems, and should be well placed to attack both its traditional educational and enthusiast market, as well as the mass consumer markets through stores such as Dixons and Argos.

RISC OS 3

The new Acorn operating system, RISC OS 3 version 3.10, is now available for all Acorn RISC machines. For more information on RISC OS 3, we refer you to RISC User Volume 5 Issues 1, 2 and 3.

RISC OS 3 version 3.10 does have a few improvements over version 3.00, and a number of bugs have been fixed. The good news for ARM2 owners is that the system has been optimised to run much faster, and Acorn say RISC OS 3 should run just as fast as RISC OS 2. The RISC OS 3.10 upgrade is available in four different packages, as follows.

a) The upgrade kit for RISC OS 2 users officially costs £89 inc. VAT, but will be available at the special price of just £49 inc. VAT until the middle of next year. The kit consists of a new chip set, the new manuals, the RISC OS 3 discs, an audio tape and a set of release notes. The two RISC OS 3 guides are

now sandwiched together into one manual, bound conventionally rather than ring bound.

b) The upgrade kit for A5000 users costs £19 inc. VAT, and simply consists of the new chip set and discs. This price is at cost price to Acorn.

c) Educational users can buy a bulk upgrade for ten stations for £399 inc. VAT. For this they receive ten chip sets, one set of manuals and one set of discs.

d) Finally an adaptor set to enable the old A3000s and A4400s to take the new ROMs is available for £30 inc. VAT and fitting (in addition to the normal upgrade cost). Again, this is at cost price to Acorn.

Acorn has managed to make RISC OS 3 available to existing users much more cheaply than we feared. All users should consider upgrading as soon as possible, and all upgrades are available through dealers (including Béebug, of course).

The Acorn Universal Networking Strategy

The new Acorn A3020 and A4000 computers have a feature that will be of great interest to network users. The old 5-pin DIN Econet socket has disappeared, to be replaced by a new 15-pin D-type socket. The internal network circuitry has also been redesigned to provide a completely new approach to networking, which is all a part of Acorn's new philosophy, the *Acorn Universal Network*, or AUN for short.

Since the dawn of the BBC micro era, Acorn has promoted its proprietary and economically priced Econet system as the network to use. The main alternative to Econet is the industry standard Ethernet, which is much more expensive, but can carry data at speeds of 10Mbits per second - about 50 times the speed of Econet.

Until now the only way to connect an Acorn RISC machine to an Ethernet was to add a separate Ethernet module. However, the new internal design of the A3020 and A4000 enables a whole variety of cards to be plugged straight in, permitting connections to all sorts of network. Currently the only cards available are for Econet and Ethernet, but the system is flexible enough to enable cards for any network to be designed. This redesign means that the old Econet cards will not fit the new machines, but the cost of the redesigned Econet upgrade is expected to be the same. Although the network socket is different to the old sockets, a new cable allows connection to an existing Econet network.

As an indication of their commitment to networking, Acorn has also released two A5000 models without hard discs. The A5000 ES (£1299 ex. VAT) has a built-in Econet interface, and the A5000 NS (£1399 ex. VAT) has a built-in Ethernet interface.

So, Acorn machines can now easily be connected to both Econet and Ethernet networks, but there is no comprehensive method for connecting the two different

types of network together. This is where AUN comes in.

The first product to include specific AUN software is the AUN Level 4 Fileserver Release 2, costing £399 ex. VAT. This new release of the fileserver software (which simply turns a networked computer into a fileserver without the need for additional hardware) will now allow fileservers to be hooked into a much larger network system, which can contain many different types of network. Fileservers linking Econet and Ethernet networks act as *gateways* between the two types of network, simply by running AUN.

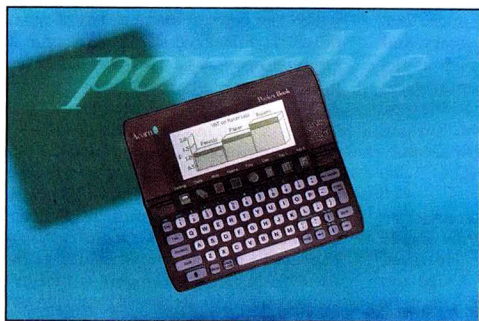
A complete AUN consists of a main Ethernet *backbone network*, to which any number of independent network clusters can be connected. Ethernet clusters can be connected to the backbone directly, and Econet clusters are connected via gateway fileservers. The clever part is that every station on every cluster will be able to access every fileserver on every other cluster, and these will appear to the user as normal storage device icons on the icon bar, regardless of whether the fileserver being accessed is on Ethernet or Econet. The system is very simple to use, and all this is done invisibly as far as the user is concerned.

On top of all this, Acorn's TCP/IP software can be installed on any RISC OS machines to allow them to communicate with non-RISC OS based fileservers, such as PCs, Apples or Unix systems. Thus an Econet network can be connected to an Ethernet with Unix fileservers, and all RISC OS computers running TCP/IP on the Econet network will be able to access the Unix fileserver directly.

These exciting developments massively extend the potential connectivity of Acorn machines, while retaining compatibility with the older Econet standard.

The Acorn Pocket Book

The Acorn Pocket Book is a very small, hand-held computer, based on the Psion Series 3 portable organiser. The software included in the Pocket Book has been specially created to fit in with Acorn's guidelines, and a link system has been devised to enable the Pocket Book to integrate with the RISC OS Desktop; this means the Pocket Book simply appears as a separate filing system on the hosts's icon bar.



Acorn's new Pocket Book

The resident software that is built in to the Pocket Book consists of *Write* (a word processor with spelling checker), *Abacus* (a spreadsheet), *Cards* (a database), *Time* (clock and alarm) and *Calc* (a scientific calculator). The operating system, which is Psion's

standard Series 3 OS, is multi-tasking, and allows the user to switch between the various tasks at will. There is 256K of RAM, and so-called Solid State Discs (SSDs) optionally provide up to 4Mb of additional data storage. There are two types of SSD that can be used: Flash SSDs require no battery backup, but deleted files still take up memory, and RAM SSDs have their own lithium battery to keep data stored. The two standard AA batteries used by the Pocket Book last for about 80 hours of active computing, or a separate mains adaptor can be used.

There is also a programming language called OPL, which can be used to write applications on the Pocket Book. The OPL editor, used to write OPL programs, is available only as a separate product - just the run-time system is provided as standard.

Acorn hopes the Pocket Book will be bought by schools to enable pupils to collect data out in the field and process it in the classroom. It also hopes that concerned parents will invest in Pocket Books for their children, as at £249.95 inc. VAT (£199 ex. VAT to education) they are quite a lot cheaper than full Acorn RISC computers. We will have to wait and see.

A full review of the Pocket Book will follow as soon as we can obtain one.

The New Product Range

The following is a list of all new or repriced Acorn computer products, but does not show the whole Acorn range. Prices shown do not include VAT, and educational prices are shown in brackets where applicable.

A3000 1Mb FD	£525.00	(£475)	A4000 2Mb HD80 Multiscan	£999.00	(£999)
A3010 1Mb FD Family Solution	£424.68		A4000 Home Office Colour	£999.00	
Colour monitor for A3010	£220.00		A4000 Home Office Multiscan	£1049.00	
A3010 1Mb FD Learning Curve			A5000 2Mb HD80 Multiscan	£1399.00	(£1199)
(inc. Colour monitor)	£680.00		A5000 2Mb HD80 Learning Curve	£1445.96	
A3020 2Mb FD Colour	£749.00	(£649)	A5000 4Mb HD120 Multiscan	£1599.00	(£1399)
A3020 2Mb FD Multiscan	£799.00	(£699)	A5000 ES (Econet)	£1299.00	(£1149)
A3020 2Mb HD60 Colour	£899.00	(£799)	A5000 NS (Ethernet)	£1399.00	(£1249)
A3020 2Mb HD60 Multiscan	£949.00	(£849)	A540 4Mb HD120 (no monitor)	£1995.00	(£1699)
A4000 2Mb HD80 Colour	£949.00	(£849)	Acorn Pocket Book	£212.72	(£199)

All Acorn machines are available from our sister company Beebog Ltd., from whom more information can be obtained.

RU

NEW

Archimedes Software

Gives you room to expand!

SparkFS

SparkFS is a new compressed filing system that lets you fit more on your discs. Programs work as normal, but files take up less space.

- ⚡ Files can be stored individually not in easy to damage archives and there are no confusing duplicate disc drive icons to master.
- ⚡ Reads ARJ, ArcFS, SEA/PKarc, PackdDir, Spark, Zoo, Zip, LZH, Tar, Packit, Stuffit and Compactor archive files.
- ⚡ Writes SEA/PKarc, Tar, Zip and Spark archive files. Zip files can be used on other machines and retain attributes.
- ⚡ Modular design means you only need to load pieces you want. Scrap files can be in RAM or on disc and won't fragment memory
- ⚡ DES data encryption to password protect your files. Supports UUnicode, HQX, AtoB, FCET, Boo and UNIX Compress
- ⚡ Completely transparent access to files. Extensive range of powerful data compression algorithms.

SparkFS with manual and case is £23.96 inclusive.
(Upgrades, owners of Spark and ArcFS, can deduct £5.99 each)

NEW

ArcFAX - Class 2 Fax modem package

Allows sending and receiving faxes from the desktop using a suitable Fax modem. Received faxes can be saved as sprites. Faxes are sent by printing in the usual way. Script language, telephone directory, scheduling, received image processing.

ArcFAX with manual and case £23.96

NEW**S**

Disc 2 - MicroSpell 3.XX New Desktop Spell checker

Provides all the features possible in a stand alone spelling checker. Check files, check text in icons, continuous spell check whilst you type, display and correct last error. Edit dictionary. Multiple dictionaries. Supplied with 200,000 words. Fast. Foresight mode, displays closest match in dictionary to word being typed and allows completion with a key press or mouse click. Good for poor typists.

(Upgrades, owners of MicroSpell 1.XX and 2.XX can upgrade for free)



Disc 35 Trace/D2Font - Make your own fonts

Trace is a program for converting Sprites into Draw files. D2Font, takes Draw files and produces outline fonts suitable for use with Draw and DTP programs. Trace and D2Font allow anyone with a scanner to make their own fonts from printed examples. Examples of Trace and D2Font included.

Discs are £5.99 each, all inclusive.

David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR.

Free Air Mail delivery on overseas orders. Extensive range of other Archimedes software available (programmers tools, games, utilities, clip art), please send for free list.

Mortgage Term Analyser

by Toby Williams

In the early years of a repayment mortgage (as distinct from an endowment mortgage), fixed monthly repayments consist almost entirely of interest, and hardly any capital. With fluctuating interest rates, the outstanding debt at the end of a year might even increase! Only after several years does the balance start to shrink; then the interest reduces, so the capital element of the monthly payment starts to rise. This effect snowballs in the later years.

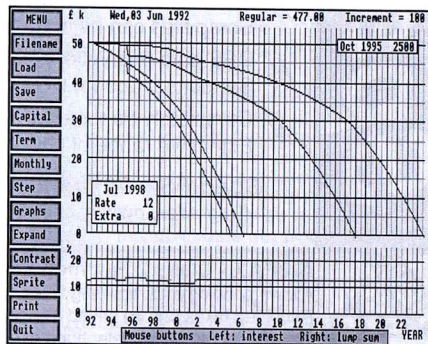
Often, a modest additional payment could skip the early years and cut them off the mortgage term. The program given here draws a graph to show the effect of increasing your monthly repayments, starting now.

It also shows the effect of paying lump sums when you feel rich, or lower payments when you don't. You can amend various data and parameters to suit your own mortgage, or try different interest rates etc. This can really show you how save money, as you will see if you run the program and examine the graphs.

The program takes the £30,000 tax relief ceiling into account, with 25% fixed rate tax relief at source (MIRAS). You can see the mortgage algorithm if you examine *FNcalc* in the listing at line 1080. Actually, lenders compute compound interest in a variety of ways, but the error is small for our purposes.

An extended version of the program is on this month's magazine disc, but the basis is presented in the listing here. Nimble-fingered readers might like to type it in carefully, save it, and then run it.

First, the lump sum DATA statements are read in by *PROCread_extra*, and then the nominal number of years is calculated by *PROCcalc*. Appropriate scales are then calculated by *PROCsetscales*, and drawn. A set of graphs is plotted, for increasing monthly payments, both with and without the lump sums added in, calling *PROCcalc* each time.



The disc version of the Mortgage Analyser

The listing illustrates a £40,000 loan repaid at £400 per month, taking 20 years at 11.5%, say. When you have got the program working, edit the lines from 200 to 270, inserting your own values for starting balance, interest rate, etc. List any lump sum payments in the DATA statements between lines 130 and 150; line 140 shows the format. The final DATA statement must be retained.

DISC VERSION

The disc version is not multi-tasking, but automatically fills the screen in the current mode, and it is fully interactive. As the mouse traverses the menu buttons, a dialogue window offers prompts and information.

Mortgage Term Analyser

When the mouse is moved over the graph area, the interest rate and extra payments are displayed for the month under the pointer: clicking Select changes the interest rate (from then on), and clicking Adjust inserts an extra payment (in that month only).

Fixed payments are listed on screen, and the time scale can be zoomed. Repayments for a fixed term can even be calculated: this uses successive trial and error. A graph of interest rate is drawn underneath the repayment graphs. Data and parameter alterations can be saved to a file. See the illustration, which shows the disc version calculating a £50,000 mortgage over various terms and interest rates.

Regular use of this program will help you to keep the cost of your luxuries in perspective!

```
10 REM          >Mortgage
20 REM Program  MIRAS loan analyzer
30 REM Version  A 1.00
40 REM Author   Toby Williams
50 REM RISC User October 1992
60 REM Program  Subject to Copyright
70 REM          Not Public Domain
80 :
90 ON ERROR VDU4:REPORT:PRINT* at lin
e *;ERL:END
100 MODE 12
110 :
120 REM Enter extra lump sum payments
130 REM      month year amount
140 DATA    7, 1996, 800
150 REM      etc.
160 REM      end table with...
170 DATA    0, 0, 0
180 :
190 REM Must initialize these...
200 s_b = 40000 : REM starting balance
210 f_y = 1992 : REM first year
220 s_o = 400 : REM standing order
230 i_r = 11.5 : REM % interest rate
240 t_r = 25 : REM % tax rate

250 m_t = 30000 : REM max tax relief
260 inc = 50 : REM increment
270 n_i = 2 : REM num of incs
280 REM ...end of your own parameters
290 :
300 REM Start of program...
310 m_r = (i_r/100)/12:REM monthly rate
320 m_y = 50 : REM max years
330 t_m = 0 : REM total mnths
340 m_m = 12*m_y+1 : REM max months
350 m_n = FNmonth : REM month now
360 DIM e(m_m) : REM extra pmnts
370 DIM b(n_i,1,m_m) : REM balance
380 PROCread_extra
390 VDU5:CLG
400 :
410 FOR n=0 TO n_i
420 b(n,0,0)=s_b
430 b(n,1,0)=s_b
440 NEXT n
450 t_m=FNcalc(0,0,0)
460 PROCsetscales(t_m)
470 PROCdrawscales
480 FOR n=0 TO n_i
490 FOR add=0 TO 1
500 dummy=FNcalc(n,inc,add)
510 PROCgraph(n,add)
520 NEXT add
530 NEXT n
540 PRINT
550 END
560 :
570 DEF PROCread_extra
580 LOCAL extra, mth, yr
590 FOR mth=1 TO m_m
600 e(mth)=0
610 NEXT mth
620 REPEAT
630 READ mth,yr,extra
640 IF yr<>0 THEN
650 mth+=12*(yr-f_y)
660 IF mth<=m_m THEN e(mth)=extra
670 ENDIF
680 UNTIL yr=0
690 ENDPROC
700 :
710 DEF PROCsetscales(num_of_months)
720 x0= 68:x_len=1180
```

Mortgage Term Analyser

```

730 y0=104:y_len= 820
740 x_scale=num_of_months
750 y_scale=(1.06*(1+b(0,0,0)/1000)) D
IV 1
760 x_mult=x_len/x_scale
770 y_mult=y_len/y_scale
780 ENDPROC
790 :
800 DEF PROCdrawscales
810 LOCAL x,y,s,ystep
820 @%=2
830 s=1+(x_scale DIV 12) DIV (x_len/32
)
840 FOR x=0 TO x_scale STEP 12
850 MOVE x0+x*x_mult,y0
860 DRAW x0+x*x_mult,y0+y_len
870 NEXT x
880 FOR x=12 TO x_scale STEP 12*s
890 MOVE x0+(x-6)*x_mult-16,y0-16
900 PRINT (f_y-1+(x DIV 12)) MOD 100;
910 NEXT x
920 MOVE x0+x_len-64,y0-48
930 PRINT "YEAR"
940 :
950 REM in FALSEk...
960 s=y_scale DIV (y_len/64)
970 IF s<=2 THEN ystep=2 ELSE ystep=5
980 FOR y=0 TO y_scale STEP ystep
990 MOVE x0,y0+y*y_mult
1000 DRAW x0+x_len,y0+y*y_mult
1010 MOVE x0-48,y0+y*y_mult+8
1020 PRINT y
1030 NEXT y
1040 MOVE x0-60,y0+y_len+40
1050 PRINT "FALSE k"
1060 ENDPROC
1070 :
1080 DEF FNcalc(c,i,a)
1090 LOCAL m,n,t_i,relief,f_p,int,cpt
1100 REM c = which increment
1110 REM i = amount of increment
1120 REM a = whether extra added
1130 REM m = month
1140 REM t_i = tax relievable interest
1150 REM f_p = full pymnt before relief
1160 REM int = interest before relief
1170 REM cpt = capital paid this month
1180 m=0
1190 REPEAT
1200 m+=1
1210 t_i=m_r*(b(c,a,m-1) MOD m_t)
1220 relief=t_i*(t_r/100)
1230 f_p=s_o+relief
1240 int=m_r*b(c,a,m-1)
1250 cpt=f_p-int
1260 b(c,a,m)=b(c,a,m-1)-cpt-a*e(m)
1270 IF m>m_n THEN b(c,a,m)=-c*i
1280 UNTIL (b(c,a,m)<=0) OR (m>=m_m)
1290 IF m<m_m THEN
1300 FOR n=m+1 TO m_m
1310 b(c,a,n)=b(c,a,n-1)
1320 NEXT n
1330 ENDIF
1340 =m
1350 :
1360 DEF PROCgraph(curve,added)
1370 LOCAL mth,y
1380 mth=0
1390 MOVE x0,y0+(b(curve,added,mth)/100
0)*y_mult
1400 REPEAT
1410 mth+=1
1420 y=y0+(b(curve,added,mth)/1000)*y_
mult
1430 IF y<=32767 THEN DRAW x0+mth*x_mu
lt,y
1440 UNTIL (b(curve,added,mth)<=0) OR (
mth>=x_scale) OR (y>32767)
1450 ENDPROC
1460 :
1470 DEF FNmonth
1480 LOCAL m,mth$,dt$,yr$
1490 mth$="JanFebMarAprMayJunJulAugSep
OctNovDec"
1500 date$=FNread_sys("Sys$Date")
1510 year$=FNread_sys("Sys$Year")
1520 m=INSTR(mth$,RIGHT$(date$,3),0)
1530 m=1+(m DIV 3)+12*(VAL(yr$)-f_y)
1540 =m
1550 :
1560 DEF FNread_sys(sys_var$)
1570 LOCAL kind$,length$,block%
1580 DIM block% 256
1590 SYS"OS_ReadVarVal",sys_var$,block%
,256,0,3 TO ,,length$,kind%
1600 IF kind%<>0 THEN ERROR
1610 block%?length%=13
1620 =$block%

```

RU

Virus Update

Mark Moxon looks at the state of the computer virus scene on the Archimedes, and examines a package to help combat the latest strains.

As a programmer, I get annoyed by viruses. The part that really bothers me is that they're anti-social, and one of the great pleasures I get from programming is seeing other people getting enjoyment from my programs. Needless to say there are (a few) programmers out there with different attitudes, and these rather sad people are still creating destructive programs that replicate and can cause varying amounts of damage.

Pineapple Software recognises the threat and is providing a virus protection service. For £24 per annum you can subscribe to this service, for which you will receive the most comprehensive virus killing applications available, and Pineapple will keep you informed of new strains of viruses and will update its software. Version 1.37 of their Killer application (originally written by Acorn) has just been sent out, along with version 1.20 of the VProtect module.

These two programs, earlier versions of which appeared on the RISC User disc for Volume 5 Issue 5, now know and protect against 23 families of viruses. For completeness, here is a list of those in their order of appearance on the Arc: Extend, Icon/Filter, Archie/FF8, Thanatos/RISCOSext, Vigay/DataDQM, CeBit, MyMod, Net Manager, TrapHandler, Module/Silicon Herpes, Image, Link, NetStatus, Parasite, Sprite, Valid, BBCEconet, Garfield_W, Code, SpriteUtils, Mode87/ModVir, Garfield_I, T2.

The Killer application will scan files on any filing system (including ArcFS) and will check for infection, removing and reporting any viruses found. The VProtect module should be loaded as soon as your machine is switched on (normally through a boot sequence) and checks !Boot files for suspicious lines. A clean machine can be kept clean from all viruses (except the Archie virus) by this module.

There are too many new viruses to describe each one in detail, but it is worth taking a look at those viruses that may try to change your machine in some way (usually by corrupting discs or memory). These viruses contain so-called malicious code (which seems a bit of a tautology to me - the thought of a benign virus is alien, surely?), and the following viruses contain such code: Parasite, Sprite, Thanatos and T2. Let's look at these in slightly more detail.

Parasite - This particularly destructive virus can do all sorts of things at random times, like corrupting discs and crashing the computer.

Sprite - In February it will change the printer settings, zero the CMOS RAM settings and display a message.

Thanatos - This, again, is a bad virus with a varied repertoire of nasties, including corrupting drives 0, 4 and 5 on Christmas day and New Year's day, displaying very rude messages randomly, and wiping bits of drive 0 at any time.

T2 - This virus is the latest to be discovered, and version 1.37 of Killer has been released specifically to combat it. On various dates T2 displays a message and writes invalid data to the first 32K of drives 0 to 7. Various rude messages are displayed at random, and the machine can crash or corrupt discs at any time.

As you can see, there are some nasty pieces of replicating code around. However, don't panic! Pineapple's protection software is excellent, and I would recommend that everyone subscribes to the service, if only for peace of mind. Contact Pineapple at 39 Brownlea Gardens, Seven Kings, Ilford, Essex IG3 9NL.

RU

PIPEDREAM4

Imagine a flexible word processor in which you can use fonts and pictures to give stunning presentation to your letters and reports. And a 93,000 word spelling checker and user dictionaries for letter-perfect writing.

Imagine the most powerful spreadsheet package on the Archimedes. Background recalculation so you carry on working while it computes. 160 built-in functions, plus a programming language for your own custom functions. Arrays within slots for easy manipulation of structured data.

Imagine dynamic charts straight from your data. Multiple scales to compare trends. Personalised Penguin Graphics with bars filled by your own draw files to dazzle your friends and colleagues.

Imagine a fast and compact database package with full sorting, searching and selection criteria. With links straight to the word processor for printing mailshots and labels.

Imagine user-friendly features such as configurable menus, template files to start new documents from, and automatic fitting of column widths to the data.

PipeDream 4

the works

Free your imagination.

RRP £196 + VAT. Call for education prices and site licences. PipeDream 4 is ideal for any Archimedes, A3000 or A5000 with 2MB RAM or more.

COLTON software

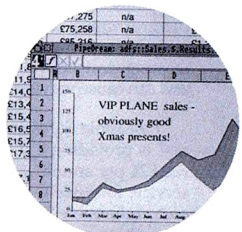
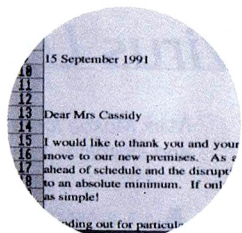
Coltonsoft Limited
2 Signet Court
Swanns Road
Cambridge
CB5 8LA
Tel: (0223) 311881
Fax: (0223) 312010

For a free  brochure, complete and return this coupon.

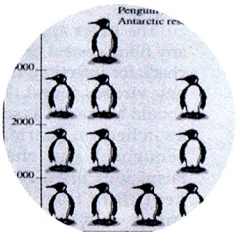
Name

Address

Postcode



	C	D	E	F	G
Grid x	Grid y	Munro	Area	Chap	Pa
17m	2265	7264	48	SH	13
29m	2134	8345	45	WH	11
29m	2970	7732	46	CG	7
0m	2266	7263	44	SH	13
1m	2418	7875	43	CH	14
1	2212	7663	47	CH	8
1	2144	8263	42	WH	10
1	2470	7746	41	CH	1



Drawing the Professional Way

Roger Amos tries out ArtWorks.

Computer Concepts' long-awaited drawing package ArtWorks is due out at last. The relatively high price may initially make some Acorn users think twice about purchasing it, but Computer Concepts' Imression II at a similar price has shown that there is a substantial market for good quality software, even at this price level among home and educational users.

Let's look at what ArtWorks is and is not. Readers may also find it useful to refer to the earlier preview of ArtWorks in RISC User 5:6. Ultimately it is an object-based drawing package as are Acorn's Draw and 4Mation's Vector. Anything that can be done in Draw can also be done in ArtWorks. But ArtWorks has many facilities which are completely new to Acorn users, and others for which you would normally need additional software. Its "envelope" facility, for example, is similar to the "mould" feature offered by Drawbender, Poster and TypeStudio.

However, ArtWorks is not another enhanced version of Draw. I think 4Mation would forgive me for describing Vector as a greatly improved and expanded version of Draw. Deliberately, it follows Draw's conventions so closely that anyone competent in Draw will be similarly competent in Vector after a few minutes' "play". But switching from Draw to ArtWorks involves learning new terminology and practices and, initially, frequent recourse to the user manual.

This is because ArtWorks represents a fresh start, aiming to provide for the Acorn RISC machines the same kind of facilities that are provided on PCs and Macintoshes by professional drawing packages such as Corel Draw, Aldus Freehand and Adobe Illustrator.

REDRAWING SPEED

Everyone who has used vector graphics packages for complex drawings knows the

frustration of waiting while the software redraws the screen as this redrawing time limits the productivity of drawing software. For this reason Computer Concepts chose to write ArtWorks in ARM Assembler. In addition, by locating the code for many of its tools and facilities in independent modules, it is easy for the package to be customised or for a particular module to be updated.

ArtWorks is certainly responsive - running on an A5000 it is claimed to redraw five times as fast as Corel Draw on a 486-based PC. And if that's still not fast enough for you, two facilities make it faster still. Plotting the outlines is one task involved in displaying vector graphics. Painting in the fill colours, which in ArtWorks may well be "blends" or graded fills, and adding anti-aliasing to oblique and curved edges - one of the unique features of ArtWorks - add significantly to the computer's workload.

So the rather clumsily named "WYSIWYG control" allows you to vary the quality of the display. At maximum setting you see the "finished" graphic complete with anti-aliasing. As you turn the control down, first the anti-aliasing, then the blends and graded fills, then the plain fill colours and lastly any sprites present disappear. At minimum, only the outlines are visible, shown in black, but redraw is very fast indeed - see figure 1. At one setting a little above minimum outlines and sprites alone are visible: useful if you wish to trace around an imported sprite such as a scanned image. You can still select the required fills as you go, but they do not hide the sprite you are copying.

The other redraw accelerator is an optional "interruptible redraw". When activated this makes redrawing a background task, allowing you to get on with the work in hand.

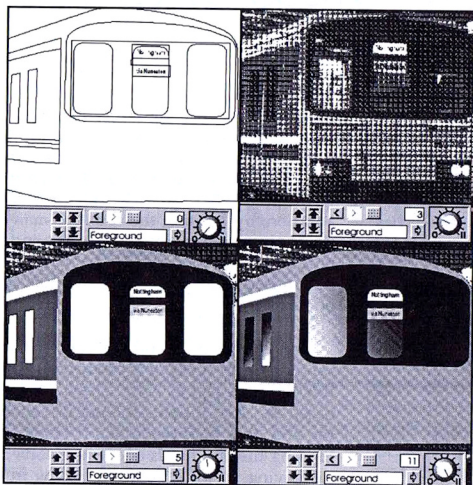


Figure 1. The effect of the WYSIWYG control (settings of 0, 3, 5 and 11)

DRAWING WITH ARTWORKS

Clicking Select on ArtWorks' icon bar icon produces an empty window, and clicking in this calls up a separate toolkit and a status display. These can be moved to any convenient location. Most of the tools (see figure 2) are familiar from other packages, but some are new and some are conspicuous by their absence.

The freehand drawing tool allows you to drag the pointer around leaving a trail of the current line width and colour. ArtWorks converts the finished line to a series of conventional Bezier curves.

In its drawing facilities ArtWorks frequently follows some conventions reminiscent of FontEd. For instance, there is no explicit auto-close facility. To close a path you simply drag its endpoint on to its start point.

Again, when editing curves, Bezier control points are only visible and adjustable if the endpoint to which they are

attached is selected. I find this far preferable to the infuriating dense tangle of control points that appears when editing complex curved objects in other drawing packages.

You can select more than one point in an object. If you then drag one point, the other selected points move an equal distance in the same direction. Usefully this allows you to preserve the shape of part of an object while distorting another part of it.

As in FontEd, moves are implicit. Moves between sub-paths are possible by creating the sub-paths as separate objects, selecting them and applying a *Join Shapes* menu option which is similar to Vector's *Merge Paths* facility. The "joined" sub-paths become one object, the filling of overlapping areas being controlled by the winding rule.

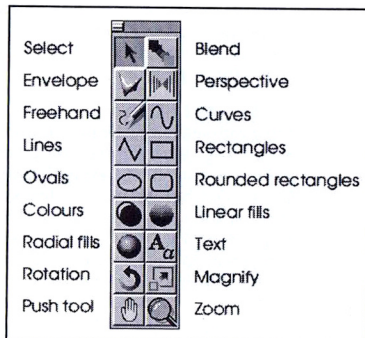


Figure 2. The standard ArtWorks toolkit

NOMENCLATURE

Closed paths are called "shapes" and only shapes can have a fill colour. If you insist that an open path should appear to hold a fill colour, you must use a separate shape with a transparent outline to hold the colour and group this with the open path.

Because "thin lines" cause difficulties in some processes, ArtWorks discourages their

use. The default line width is 0.25 pt. If you insist on having a thin line, you can set the line width in ArtWorks to 0.

Ready-made shapes such as rectangles, ellipses and rounded rectangles, available from the toolkit, differ from their counterparts in Draw in that they are "tokenised" objects and cannot be edited as vector graphics unless you convert them first using a *Make Shapes* menu option. The same option also converts text to "shapes" so that they can be "joined" with other shapes to create stencil-text and other special effects.

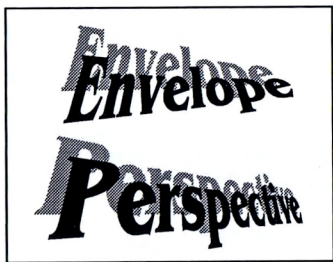


Figure 3. Envelope and Perspective

Oddly, in ArtWorks there is rather less need for text-to-path conversion since ArtWorks incorporates its own font manager. This allows text objects to have the same styles - separate line colours, fill colours, line widths and line patterns - as path objects, while still capable of being treated as text objects with editable text and fonts. Text can even be given graded fills!

Many style and transformation options that are controlled by menus in other packages are controlled by tools in ArtWorks. The tool for line and fill colours applies equally to text and path objects. Graded fills - linear and radial - are provided by two further tools.

Rotation and scale tools control scaling or rotation via dialogue boxes - the usual rough rotation and scaling by dragging handles is also provided. Usefully, the rotate facility allows you to place an axis of rotation within the object or outside it.

Two tools affect the nature of the display. One is the zoom facility which has a sophisticated range of options, including one to drag a rectangle over an area of interest and then enlarged that area to fill the screen. The zoom factor ranges from 1% (1:100) to 999% (9.99:1). Unlike DrawPlus and Vector, ArtWorks allows *New Views* into the same drawing, with different zoom settings on each.

The push tool, familiar to users of Impression, allows you simply to drag the drawing around until the required part of it is in the window - all very easy and intuitive.

The envelope tool provides controlled object distortion, like the moulds in DrawBender and TypeStudio. The perspective tool distorts the object so that it seems to disappear into the distance; with text this means that not only is the height reduced but also it is foreshortened (see figure 3). It even indicates a vanishing point. Later versions will allow more than one vanishing point.

COLOUR FACILITIES

The colour facilities in ArtWorks are as comprehensive as you would expect from a professional graphics package. Indeed it performs many colour calculations with 64-bit accuracy and some with 128-bit accuracy.

ArtWorks incorporates its own colour module which uses dither patterns to provide a full-spectrum display in 16-colour modes and millions of colours in 256-colour modes. The dithering is coarser than that in RISC OS 3's, being based on a 4 x 4 pixel matrix instead of a 2 x 2 pixel matrix. This allows very smooth and accurate gradations in colour. Although detail on the screen is less sharp, most work from this kind of package is destined for print so screen display is ultimately less important.

Three "colour models" assist in the choice of shades. The familiar RGB system offers three sliders each calibrated 0 to 100. You may suspect that not all 16,777,216 24-bit colours are accessible, but you can type your entries to two decimal places if the last few bits are significant.

A colour cube uses the HSV (hue/saturation/value) system - see figure 4. The hue slider, calibrated 0 to 359 degrees, determines which slice of the cube is opened, while the saturation and value are chosen as percentages to control the shade obtained. The HSV cube is extremely easy and intuitive to use.

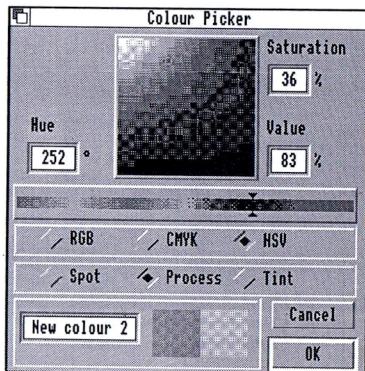


Figure 4. Using the HSV colour cube

The third colour model is the CMYK system (cyan/magenta/yellow/key) used in the printing industry. The sliders, one for each of the four "inks", are calibrated in percentages giving access to millions of colours, but there is huge redundancy since the key (black) tends to swamp the other colours. The CMYK system emulates the way in which colours are built up in four-colour printing and in inks, the higher the percentage the darker the colour. So, when cyan, magenta and yellow are all 100%, irrespective of the key setting, the resultant colour is black! The CMYK facility will be valuable to those using ArtWorks to prepare material for colour printing. ArtWorks also includes a facility to save and print four-colour separations and also spot colour separations.

EDITING

ArtWorks uses a clipboard to allow objects to be cut or copied and pasted elsewhere; these operations will be familiar to users of Ovation and Impression. It is also

used in conjunction with layers. Users of Vector or DrawPlus will know how useful layers are for locking objects or making them invisible if they get in the way. Layers are somewhat simpler in ArtWorks, although all the facilities are available. Objects are only accessible and selectable in the current layer, although a "multi-layer" option makes all objects accessible. One way to move an object from the current to a different layer is to cut it, select the destination layer and then paste it.

Order control is limited to back, front, backward and forward. But the backward and forward options are "intelligent" in that they move the selection as many places as are necessary to make a difference to the drawing.

Following the RISC OS convention, F8 undoes the last operation, a facility that will be appreciated by all who occasionally make mistakes.

INTERPOLATION

The blend tool provides a more sophisticated version of the interpolation facility provided in the RISC OS 3 versions of Draw and Vector. The parent objects need not have the same number of points (although better results are obtained if they do); they can even be groups. The intermediate lines or shapes created are not discrete objects; the two parent objects and their "offspring" constitute a "blend object" in which only the definitions of the parents and the number of offspring are stored. The offspring are created "on the fly" during redrawing. This saves memory and also ensures that subsequent edits to either parent are immediately reflected in the offspring. Usefully the parent objects can be shared with other blends. An "expand" facility converts blend objects to discrete objects if the drawing must be made compatible with Draw and DTP packages.

FILE COMPATIBILITY

As you would expect, ArtWorks will load and save files in its own file format and in Acorn Draw format. It also exports files in

Drawing the Professional Way

Corel Draw and two Illustrator formats, but does not load any of these.

What makes ArtWorks very attractive to folk who handle graphics from a variety of sources and need to transfer them to a variety of sources is ArtWorks' support for Adobe's widely used EPS (Encapsulated PostScript) standard. ArtWorks will both load and save files in this format, irrespective of the source or ultimate destination. Especially when running on an A5000, which can read and write MS-DOS discs, ArtWorks offers almost limitless file exchange possibilities, becoming a veritable Clapham Junction of the graphics world.

So who will buy ArtWorks? Well many of the existing Impression users will surely be tempted, even though the need for high quality graphics is probably less than that for DTP. Until now, Acorn has made much less impact in the professional graphic design market, mainly because of the lack of professional quality software.

The purchase price of an A5000 and ArtWorks is less than half that of a comparable Apple Macintosh with drawing software, and slightly less than that of a 486-based PC with Microsoft Windows and Corel Draw. Since the Acorn package offers better performance and excellent file interchangeability, ArtWorks could be set to lead Acorn into new and lucrative markets.

Since Roger Ámos wrote his review, Computer Concepts has fixed the price of ArtWorks at £169, less than previously suggested. The package will also include a 200 page full colour manual, separate Rough Guide quick reference manual, together with 15 discs containing the software, numerous examples of clip art, and a library of 220 outline fonts, mostly display and headline faces. ArtWorks thus offers much more than just the software reviewed above.

Product	ArtWorks
Supplier	Computer Concepts Gaddesden Place, Hemel Hempstead, Herts HP2 6EX. Tel. (0442) 63933
Price	£169.00 ex. VAT

RU

"FIRST" ADVANCED STATISTICAL SYSTEM

Is the ESTABLISHED Statistics Package for the Acorn Archimedes

It is widely used in Research, Physical and Life Sciences, Medicine, Industry, Business and Education

"FIRSTJR" is designed to appeal particularly to the Education Sector

Providing an impressive selection of statistical techniques it includes FIRST's powerful data handling, interfacing and display facilities and on-line manual

Our new product "FIRST JR" is now available

FIRST JR offers a remarkable performance/price ratio at its cost of £55

Previous ads. in RU contain some details on FIRST

For full technical and pricing information on the latest version of FIRST and FIRST JR contact:

**Serious Statistical Software, Lynwood, Benty Heath Lane,
Willaston, South Wirral L64 1SD.
Tel. 051 327 4268.**

Neural Computation

A Beginner's Guide

Reviewed by Lee Calcraft

There is virtually no neural computing software available for the Archimedes, so the release of *The Beginner's Guide*, consisting of a book and two discs to run on the Arc, is a most welcome event.

The pack's 140 page book is well written, and contains a useful introductory chapter on neural computing. This is followed by six chapters covering major areas within the discipline, including auto-association, pattern association and back propagation. From the text it is clear that the two discs form the focus of the package, providing some 20 neural network simulations designed to run on the Archimedes. There are also versions available for the PC and the Apple Macintosh.

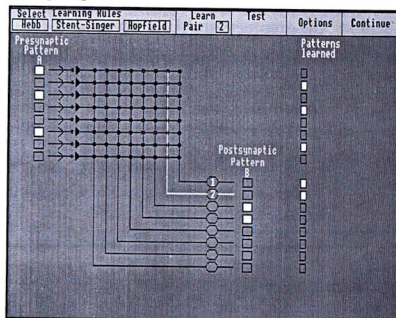
USING THE PROGRAMS

The programs are all non-multi-tasking, and in fact the Archimedes veneer is very thin indeed. Application directories are not used, filenames do not use full paths (so that menus and so on cannot be found if you happen not to be using the default filing system or drive), and the hard disc installer failed with a 'Bad drive' error - probably for the same reason. Moreover, if you do try to use the programs from floppy disc, the menu system adopted will have you swapping floppies to an excessive degree.

Once you have got the programs installed, and have got used to the way they work, you can use the menu to call up the various tutorial sequences and their accompanying simulations. The latter all allow a good degree of user interaction, so that, typically, you will use the mouse to set the inputs of a particular network to levels of your choice for a learning cycle. You might then present various other inputs and see whether these were recognised by the network etc.

A graphical rather than a mathematical approach to the representation of networks has been adopted, and this makes a refreshing change from the many tomes on the subject which predominantly use mathematical models. Each simulation is represented graphically (see figure), to the extent of indicating the size of any given weight by the size of a small red dot inside each weight symbol.

Unfortunately the simulation programs are supplied in compiled Basic (compiled using Silicon Vision's RiscBASIC compiler). As a result, it is not possible to learn from the programs themselves, or to modify them in any way. Notwithstanding, all programs performed well, but the accompanying text (both on-screen and written), was sometimes insufficient to explain everything that was going on.



Hebbian network in Learning mode

All in all, this is a most useful package. Its real drawback is the price: it costs a staggering £200 for a single-user, and £400 for a multi-user licence. I feel bound to comment here that I prefer the publisher's first thoughts on pricing (£100 for a single user and, £200 for a multi-user), readable under the sticky label on their promotional leaflet!

The pricing of this product means that it is likely only to be sold to educational establishments (which is a shame), though because of its substantial book content, it might be possible to borrow a copy (with discs) via inter-library loans. The ISBN number of the book is 0-86377-235-8.

Product	Neural Computation: A Beginner's Guide
Supplier	Lawrence Erlbaum Associates Ltd. 27 Church Road, Hove, East Sussex, BN3 2FA.
Price	£200 + VAT (single-user) £400 + VAT (multi-user) A free demo disc is available on application.

RU

Jello and the Art of 3D Graphics

Part 1: Blob

Mark Moxon introduces the first of a short series on 3D graphics that will turn your mind to jello.

3D graphics is one of those subjects that people get hooked on, like politics and soap operas. I'm hooked, and in this short series I hope to show that the basic techniques used to display objects in 3D are not as difficult to grasp as many think. The subject of 3D graphics was touched on back in RISC User Volume 1 Issues 5, 6 and 7, and I hope to go beyond the examples given there to show how even more can be achieved.

I'll also present a program that shows just how much fun the subject can be; and do remember that 3D graphics is fun, even to people who suffer from technofear. I shan't go into great detail about how the program has been written, but instead I'll describe the methods used in more general terms, and for those of you who really want to know how these ideas have actually been implemented, the magazine disc will contain fully annotated listings with copious comments to explain more of what is going on. Unfortunately the comments are far too copious to fit in the listing in the magazine, so the programs here are somewhat terse, but the fuller versions are well worth obtaining if you want to know more.

THE EXAMPLE PROGRAM: JELLO

The example program given here is the first part of the whole Jello application. This first part displays a correctly shaded three dimensional icosahedron which can be rotated with the mouse; an icosahedron is the shape that revolves on the screen at the start of Neighbours, for all you soap freaks (see figure 1). I'm going to call this shape a *Jello*, because by the end of the series I'll have added code to make this shape bounce around inside a box, and wobble as if it was

made of jelly (which is quite a sight, I can tell you!). The program is entirely in assembly language, which is necessary to achieve the speed needed to display the shapes in real time.

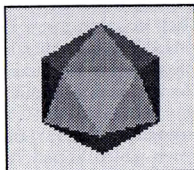


Figure 1. Hello Jello

To enter the program, you should proceed as follows. First, create a directory called *!Jello*, and inside that (double-click on

!Jello while holding down Shift) create a directory called *SourceCode*. Now create an Obey file called *!Run* inside the *!Jello* directory containing the following lines:

```
WimpSlot -min 64K
```

```
Run <Obey$Dir>.!RunImage %*0
```

and then create another Obey file called *!Compile* within the *SourceCode* directory containing the following:

```
Dir <Obey$Dir>
```

```
Run <Obey$Dir>..JelloMain
```

Next, type in the listings given here (eight in all) and save them in the *SourceCode* directory under the names given in their first lines. Take care with the line numbers for *JelloMain*, as lines will be added to this program in the next two parts. Then set the currently selected directory to *SourceCode* and double-click on the *CreateData* program to create a file called *MathsData*. Finally, double-click on *!Compile* to compile the code, which is saved as *!RunImage* in the *!Jello* directory. This method of assembling applications was described in the article *Managing Assembler* in RISC User 5:9, and it allows the rather large source code to be split up into lots of manageable parts.

Jello and the Art of 3D Graphics

It would be prudent to say a word about trapping typing errors in this system. If you have made a typing error in one of the programs passed to the LIBRARY command at the start of *JelloMain* (the so-called library programs), then the line number given in the error will be meaningless (and will, in fact, always be 2340, the last line in *JelloMain*). To help with error checking, change line 1080 in *JelloMain* to:

```
1080 FOR pass%=4 TO 7 STEP 3
```

and an assembly listing will be shown during compilation. Then you can put a PRINT statement at the start of each function in each library program to print out the name of the routine, e.g. in *ClearScrn* you could put:

```
35 PRINT ***** ClearScrn *****
```

and from the assembly listing it should be easy to track down which library routine has the error, and which line it is in. Note the line number reported will still be wrong, but the information displayed should be enough to find the error.

When you've managed to compile the program successfully, try double-clicking on the Jello application. You should get a red Jello in the centre of the screen that you can rotate with the mouse. Magic!

PROGRAM OVERVIEW

Although I shan't go into great detail about the intricacies of the Jello program quite yet, it is worth pointing out the functions of the various parts of the code. The program has been split into a number of parts to ease the writing process and to clarify the overall structure. The eight programs presented in this first part have the following functions:

JelloMain - forms the main part of the application. It contains the co-ordinate data for the Jello (lines 670 to 890), palette data (lines 1020 to 1040), the assembler locations used to store variables (lines 1110 to 1810), the initialisation code (lines 1850 to 2110) and the main loop (lines 2120 to 2340).

CreateData - creates a file called *MathsData* which contains tables of values for

calculating trigonometric functions. Simply looking up a value in a table is far quicker than calculating a value in assembler, and speed is of the essence in 3D graphics.

Adr - contains a macro to avoid problems when using the assembler ADR directive over a large range (as described in Hints and Tips, Volume 5 Issue 4).

ClearScrn - simply clears the screen to black.

DrawJello - draws the Jello, using techniques which will be explained next month.

RotateJello - rotates the Jello in space according to the mouse position. This routine uses the Rotation program for the algorithm (which will be described next month).

ScreenJell - projects the Jello onto the screen, enabling the three dimensional scene to be plotted on the screen.

Next month I'll start to explain the theory behind 3D graphics, but for now I hope you enjoy rotating your Jellos!

JelloMain

```
10 REM >JelloMain
20 REM Program Jello Source Program
30 REM Version A 1.18
40 REM Author Mark Moxon
50 REM RISC User October 1992
60 REM Program Subject to Copyright
70 REM Not Public Domain
80 :
90 :
100 ON ERROR REPORT:PRINT" at line ";E
RL:END
110 :
120 LIBRARY "Adr"
130 LIBRARY "ClearScrn"
140 LIBRARY "DrawJello"
150 LIBRARY "RotateJell"
160 LIBRARY "Rotation"
170 LIBRARY "ScreenJell"
180 :
300 zdist%=512*256
330 PRINT "Please wait...compiling"
```



```

340 PROCassemble
350 PRINT "Please wait...initialising
data":PROCinitialise
360 OSCLI("Save ^!RunImage "+STR$-cod
e%+" "+STR$~(recip+off%+12780*4))
370 *SetType ^!RunImage Absolute
380 END
390 :
400 DEFPROCinitialise
410 off%=code%-&8000
420 OSCLI("Load MathsData "+STR$~(sin+
off%))
430 FOR I%=0 TO 11:READ x,y,z
440 xj!(off%+I%*4)=INT(x*256)
445 yj!(off%+I%*4)=INT(y*256)
450 zj!(off%+I%*4)=INT(z*256+zdist%)
470 NEXT I%
480 FOR I%=0 TO 19:FOR J%=0 TO 3
490 READ jsurf?(off%+I%*4+J%)
500 NEXT J%:NEXT I%
580 FOR I%=0 TO 15:READ rgb
590 IF I%=0 THEN r=0:g=0:b=0
600 IF I%=1 THEN r=&FF:g=&FF:b=&FF
610 IF I%>1 THEN r=rgb:g=0:b=0
620 rcol!(off%+I%*4)=r
630 gcol!(off%+I%*4)=g
640 bcol!(off%+I%*4)=b
650 NEXT I%:ENDPROC
660 :
670 DATA 0, 12.3, 25.2
680 DATA 24.3, 12.3, 6.5
690 DATA 15.0, 12.3, -20.2
700 DATA -15.0, 12.3, -20.2
710 DATA -24.3, 12.3, 6.5
720 DATA 0, 28.0, 0
730 DATA 15.0, -12.3, 20.2
740 DATA 24.3, -12.3, -6.5
750 DATA 0, -12.3, -25.2
760 DATA -24.3, -12.3, -6.5
770 DATA -15.0, -12.3, 20.2
780 DATA 0, -28.0, 0
790 :
800 DATA 0, 1, 5, 5, 1, 2, 5, 5
810 DATA 2, 3, 5, 5, 3, 4, 5, 5
820 DATA 4, 0, 5, 5, 1, 0, 6, 6
830 DATA 6, 7, 1, 1, 2, 1, 7, 7
840 DATA 7, 8, 2, 2, 3, 2, 8, 8
850 DATA 8, 9, 3, 3, 4, 3, 9, 9
860 DATA 9, 10, 4, 4, 0, 4, 10, 10
870 DATA 10, 6, 0, 0, 7, 6, 11, 11

```

```

880 DATA 8, 7, 11, 11, 9, 8, 11, 11
890 DATA 10, 9, 11, 11, 6, 10, 11, 11
900 :
1020 DATA &00, &00, &66, &77, &88, &88, &99
1030 DATA &99, &AA, &AA, &BB, &BB, &CC, &DD
1040 DATA &EE, &FF
1050 :
1060 DEF PROCassemble
1070 vdu=&100:DIM code% &10000
1080 FOR pass%=4 TO 6 STEP 2
1090 P%=&8000:O%=code%
1100 [OPT pass%:FNmain:FNcls
1110 .main1P EQUW 1:EQUW -1:EQUW -1
1120 EQUW 361:EQUW 361:ALIGN
1130 .main2P EQUW 149:EQUW 148:EQUW -1
1140 EQUW 0:EQUW 0:.mouse EQUW 3
1150 .mousex EQUW 0:.mousey EQUW 0
1160 .bank EQUW 1:.bank1 EQUW 0
1170 .bank2 EQUW 0
1250 .xrot EQUW 0:.yrot EQUW 0
1310 FNrotate_jello
1380 .xt EQUW STRINGS(12*4,CHR$0)
1390 .cenxt EQUW 0
1400 .yt EQUW STRINGS(12*4,CHR$0)
1410 .cenyt EQUW 0
1420 .zt EQUW STRINGS(12*4,CHR$0)
1430 .cenzt EQUW zdist%
1440 .xj EQUW STRINGS(12*4,CHR$0)
1450 .cenx EQUW 0
1460 .yj EQUW STRINGS(12*4,CHR$0)
1470 .ceny EQUW 0
1480 .zj EQUW STRINGS(12*4,CHR$0)
1490 .cenz EQUW zdist%
1500 .xjs EQUW STRINGS(12*4,CHR$0)
1510 .yjs EQUW STRINGS(12*4,CHR$0)
1520 .xjs5 EQUW STRINGS(12*4,CHR$0)
1530 .yjs5 EQUW STRINGS(12*4,CHR$0)
1560 .rcol EQUW STRINGS(16*4,CHR$0)
1570 .gcol EQUW STRINGS(16*4,CHR$0)
1580 .bcol EQUW STRINGS(16*4,CHR$0)
1590 .jsurf EQUW STRINGS(20*4,CHR$0)
1610 .draw:STMPD R13!,{R14}
1640 FNscreen_jello:FNdraw_jello
1660 LDMPD R13!,{PC}
1670 EQUW STRINGS(255,CHR$0)
1680 EQUW STRINGS(255,CHR$0)
1690 EQUW STRINGS(255,CHR$0)
1700 EQUW STRINGS(255,CHR$0)
1710 .stack EQUW 0
1720 .sin EQUW STRINGS(250,CHR$0)

```

```

1730      EQU$ STRING$(110,CHR$0)
1740 .cos      EQU$ STRING$(250,CHR$0)
1750      EQU$ STRING$(250,CHR$0)
1760      EQU$ STRING$(250,CHR$0)
1770      EQU$ STRING$(250,CHR$0)
1780      EQU$ STRING$(250,CHR$0)
1790      EQU$ STRING$(250,CHR$0)
1800      EQU$ STRING$(250,CHR$0)
1810      ALIGN: .recip:]
1820 NEXT pass$:ENDPROC
1830 :
1840 DEF FNmain
1850 [OPT pass%:.main:FNadr(13,stack)
1860 STMFD R13!,{R14}:SWI vdu+22
1870 SWI vdu+137:MOV R2,#0
1880 FNadr(3,rcol):FNadr(4,gcol)
1890 FNadr(5,bcol):.main1:SWI vdu+19
1900 MOV R0,R2:SWI "OS_WriteC"
1910 SWI vdu+16:LDR R0,[R3,R2,LSL#2]
1920 SWI "OS_WriteC"
1930 LDR R0,[R4,R2,LSL#2]
1940 SWI "OS_WriteC"
1950 LDR R0,[R5,R2,LSL#2]
1960 SWI "OS_WriteC":ADD R2,R2,#1
1970 CMP R2,#15:BLE main1:MOV R0,#112
1980 MOV R1,#1:SWI "OS_Byte"
1990 MOV R0,#113:MOV R1,#2
2000 SWI "OS_Byte":ADR R0,main2P
2010 ADR R1,bank1
2020 SWI "OS_ReadVduVariables"
2030 SWI vdu+23:SWI vdu+1:SWI vdu+0
2040 SWI vdu+0:SWI vdu+0:SWI vdu+0
2050 SWI vdu+0:SWI vdu+0:SWI vdu+0
2060 SWI vdu+0:SWI vdu+29
2070 SWI vdu+(640 MOD &100)
2080 SWI vdu+(640 DIV &100)
2090 SWI vdu+(512 MOD &100)
2100 SWI vdu+(512 DIV &100):MOV R0,#21
2110 ADR R1,main1P:SWI "OS_Word":.main2
2120 SWI "OS_ReadEscapeState":BCS main3
2130 SWI "OS_Mouse":CMP R0,#0
2140 MOVL R0,#360:CMPT R0,#360
2150 MOVGT R0,#0:CMPT R1,#0
2160 MOVL R1,#360:CMPT R1,#360
2170 MOVGT R1,#0:ORR R3,R0,R1,ASL#16
2180 STR R3,mousex:STR R0,yrot
2190 STR R1,xrot:MOV R0,#21
2200 FNadr(1,mouse):SWI "OS_Word"
2220 MOV R0,#112:LDR R1,bank
2230 SWI "OS_Byte":LDR R1,bank
2240 EOR R1,R1,#3:STR R1,bank

```

```

2250 MOV R0,#113:SWI "OS_Byte"
2260 MOV R0,#19:SWI "OS_Byte"
2270 LDR R1,bank:ADR R3,bank1-4
2280 LDR R0,[R3,R1,ASL#2]
2290 ADD R1,R0,#1024*40:BL cls
2310 BL rotate_jello:BL draw:B main2
2320 .main3:MOV R0,#126:SWI "OS_Byte"
2330 SWI vdu+22:SWI vdu+0
2340 LDMFD R13!,{PC}:]:=""

```

CreateData

```

10 REM >CreateData
20 :
30 SYS "Hourglass_On":DIM data% 55000
40 P%=data%:[OPT 2
50 .sin EQU$ STRING$(250,CHR$0)
60      EQU$ STRING$(110,CHR$0)
70 .cos EQU$ STRING$(250,CHR$0)
80      EQU$ STRING$(250,CHR$0)
90      EQU$ STRING$(250,CHR$0)
100     EQU$ STRING$(250,CHR$0)
110     EQU$ STRING$(250,CHR$0)
120     EQU$ STRING$(250,CHR$0)
130     EQU$ STRING$( 10,CHR$0)
140     ALIGN: .recip:]
150 FOR I%=0 TO 699
160 sin!(I%*4)=INT(SIN(RAD(I%))*(2^8))
170 NEXT I%
180 FOR I%=1 TO 12799
190 recip!(I%*4)=INT((2^18)/I%)
200 NEXT I%
210 OSCLI("Save MathsData "+STR$~sin+"
"+STR$~recip+12800*4))
220 *SetType MathsData Data
230 SYS "Hourglass_Off":END

```

Adr

```

10 REM >Adr
20 :
30 DEF FNadr(r,1)
40 IF 1>P% THEN
50 [OPT pass%
60 ADD r,PC,#(1-P%-8)MOD&100
70 ADD r,r,#(1-P%-8)DIV&100<<8:]
80 ELSE
90 [OPT pass%
100 SUB r,PC,#(P%+8-1)MOD&100
110 SUB r,r,#(P%+8-1)DIV&100<<8:]
120 ENDIF
130 ==

```

Continued on page 30

Release
Mid
October

New Publication from **RISC** developments

Wimp Programming for All

On Acorn RISC Computers

by Lee Calcraft and Alan Wrigley

We believe that Wimp Programming for All will prove to be the definitive book on this subject for all users of Acorn RISC computers.

This new book, scheduled for publication mid October, provides programmers with a complete introduction to all the techniques involved in writing multi-tasking Wimp programs to run within the RISC OS Desktop environment. No prior knowledge of the Wimp is assumed and the tutorial style of the book will enable all programmers to understand the concepts involved and to develop their skills in writing high quality programs within the Desktop environment.

Contents

Wimp Programming for All derives from the highly popular series of articles originally published in volume 3 of RISC User magazine and written by Lee Calcraft. This has been extensively revised with substantial additional material, all brought up to date for RISC OS 3.

To support the book there will be a disc containing all the programs (at different stages of development) as listed within the book, together with additional supporting applications.

Price and Availability

The book is scheduled for release in mid-October with a cover price of £12.95. The accompanying disc will be available at the same time for £4.95 (inc. VAT).

The book consists of ten main chapters and a number of appendices:

- ▶ Chapter 1: Introducing the Wimp
- ▶ Chapter 2: Windows
- ▶ Chapter 3: The Wimp Poll Loop
- ▶ Chapter 4: Error Handling
- ▶ Chapter 5: Icons
- ▶ Chapter 6: Menus
- ▶ Chapter 7: Redrawing Windows
- ▶ Chapter 8: The Wimp Message System, Loading and Saving Data
- ▶ Chapter 9: Templates
- ▶ Chapter 10: Printer Drivers and Outline Fonts
- ▶ Appendix A: RISC OS 3
- ▶ Appendix B: Indirection Operators
- ▶ Appendix C: Application Resources
- ▶ Appendix D: Setting up a sprite area
- ▶ Appendix E: The Wimp Programmer's Toolkit
- ▶ Appendix F: SWI calls described in this book

Special offer for RISC User subscribers:

Buy the book and disc together for just £14.95

Wimp Programming for All

3. The Wimp Poll

The poll loop: Example program. Not more code. Requests to open or close a window. Window user pointer. Window title. Window type.

THE POLL LOOP

The Wimp poll loop is central to the operation of any Wimp task, and is the means by which the task monitors the state of its windows. It is the task's responsibility to check the state of the task's windows, and to respond to any requests to open or close a window. This is the task's responsibility, and it is the task's responsibility to respond to any requests to open or close a window. This is the task's responsibility, and it is the task's responsibility to respond to any requests to open or close a window.

```
000 DEF PRO
001 DEF PRO
002 DEF PRO
003 DEF PRO
004 DEF PRO
005 DEF PRO
006 DEF PRO
007 DEF PRO
008 DEF PRO
009 DEF PRO
010 DEF PRO
```

The

While any task is open, requests to open or close a window are sent to the task's poll loop. The poll loop is the task's responsibility, and it is the task's responsibility to respond to any requests to open or close a window. This is the task's responsibility, and it is the task's responsibility to respond to any requests to open or close a window.

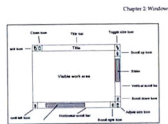


Figure 2.2 The structure of a window

The really excellent thing about the Acorn Wimp is that not only will it place windows on the screen exactly where you want them, but it will happily maintain them as well. For example, if you drag a window to a new position on the screen, then the window manager will handle the job for you. Only if you want the window to maintain its position, then you must specify this in the window's flags. In any case, the window manager will handle the job for you. Only if you want the window to maintain its position, then you must specify this in the window's flags. In any case, the window manager will handle the job for you.

CREATING A WINDOW

Having set up a parameter block and called Wimp, the next job is to create a window. In fact, it may seem to create several windows to use for various purposes, but for the moment we will keep it simple and assume that the task requires just one main window to perform its function.

It is now time to call WimpCreateWindow. This call creates the Wimp with a large quantity of information about the window, including its size, colour, whether it has scroll bars, what size it contains and so on. Once this is done, the window is ready to be used.

WimpCreateWindow

PARAMETER BLOCK

As we mentioned in Chapter 1, a window is a structure in memory. It is the task's responsibility to create a window, and it is the task's responsibility to respond to any requests to open or close a window. This is the task's responsibility, and it is the task's responsibility to respond to any requests to open or close a window.

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

WimpCreateWindow

Code

BK11 Wimp Programming for All (book + disc) £14.95

BK12 Wimp Programming for All (book only) £12.95 Plus £2 p&p in each case.

RISC Developments Ltd., 117 Hatfield Road, St Albans, Herts AL1 4JS. Tel (0727) 40303 Fax (0727) 860263

ClearScr

```
10 REM >ClearScr
20 :
30 DEF FNcls
40 [OPT pass%
50 .cls:MOV R2,#0:MOV R3,#0:MOV R4,#0
60 MOV R5,#0:MOV R6,#0:MOV R7,#0
70 MOV R8,#0:MOV R9,#0:.cls1:]
80 FOR loop%=1 TO 32:[OPT pass%
90 STMTA R0!,{R2-R9}:]NEXT loop%
100 [OPT pass%:CMP R0,R1:BLT cls1
110 MOV PC,R14:]::"
```

DrawJello

```
10 REM >DrawJello
20 :
30 DEF FNdraw_jello
40 [OPT pass%:MOV R14,#0
50 .dj1:FNadr(1,jsurf)
60 LDRB R3,[R1,R14,ASL#2]!
70 LDRB R4,[R1,#1]:LDRB R5,[R1,#2]
80 FNadr(12,xjs5)
90 LDR R6,[R12,R3,ASL#2]
100 LDR R7,[R12,R4,ASL#2]
110 LDR R8,[R12,R5,ASL#2]
120 ADD R12,R12,#yjs5-xjs5
130 LDR R9,[R12,R3,ASL#2]
140 LDR R10,[R12,R4,ASL#2]
150 LDR R11,[R12,R5,ASL#2]
160 SUB R0,R8,R6:SUB R1,R10,R9
170 MUL R1,R0,R1:SUB R0,R7,R6
180 SUB R2,R11,R9:MUL R2,R0,R2
190 SUBS R0,R1,R2:BLE dj2:SWI vdu+18
200 SWI vdu+0:MOV R0,R0,ASR#26
210 CMP R0,#2:MOVLt R0,#2:CMPT R0,#15
220 MOVGT R0,#15:SWI "OS_WriteC"
230 FNadr(10,xjs):ADD R11,R10,#yjs-xjs
240 LDR R1,[R10,R3,ASL#2]
250 LDR R2,[R11,R3,ASL#2]
260 MOV R0,#4:SWI "OS_Plot"
270 LDR R1,[R10,R4,ASL#2]
280 LDR R2,[R11,R4,ASL#2]
290 MOV R0,#4:SWI "OS_Plot"
300 LDR R1,[R10,R5,ASL#2]
310 LDR R2,[R11,R5,ASL#2]:MOV R0,#85
320 SWI "OS_Plot":dj2:ADD R14,R14,#1
330 CMP R14,#20:BLT dj1:]::"
```

RotateJell

```
10 REM >RotateJell
20 :
30 DEF FNrotate_jello
```

```
40 [OPT pass%:.rotate_jello
50 STMFD R13!,{R14}:FNadr(1,xj)
60 FNadr(2,xt):LDR R3,xrot
70 RSB R3,R3,#360:LDR R4,yrot
80 RSB R4,R4,#360:MOV R0,#12
90 .rj1:LDR R6,[R1,#yj-xj]
100 LDR R7,[R1,#zj-xj]:LDR R5,[R1],#4
110 SUB R7,R7,#zdist%
120 FNrot(8,9,10,11,12,5,7,4)
130 FNrot(8,9,10,11,12,6,7,3)
140 ADD R7,R7,#zdist%
150 STR R6,[R2,#yt-xt]
160 STR R7,[R2,#zt-xt]:STR R5,[R2],#4
170 SUBS R0,R0,#1:BGE rj1
180 LDMFD R13!,{PC}:]::"
```

Rotation

```
10 REM >Rotation
20 :
30 DEF FNrot(s,d1,d2,d3,d4,x,y,a)
40 [OPT pass%:FNadr(s,sin)
50 LDR d1,[s,a,LSL#2]!
60 LDR d2,[s,#360]:MUL d3,x,d2
70 MUL d4,y,d1:MUL d2,y,d2
80 MUL d1,x,d1:MOV d3,d3,ASR#8
90 ADD x,d3,d4,ASR#8:MOV d2,d2,ASR#8
100 SUB y,d2,d1,ASR#8:]::"
```

ScreenJell

```
10 REM >ScreenJell
20 :
30 DEF FNscreen_jello
40 [OPT pass%:MOV R0,#0:FNadr(5,xt)
50 FNadr(6,recip)
60 .sj1:LDR R2,[R5,#yt-xt]
70 LDR R3,[R5,#zt-xt]:LDR R1,[R5],#4
80 BIC R3,R3,#&30
90 LDR R4,[R6,R3,LSR#4]:FNadr(7,xjs)
100 MUL R9,R1,R4:MOV R9,R9,ASR#13
110 STR R9,[R7,R0,ASL#2]:MUL R9,R2,R4
120 MOV R9,R9,ASR#13
130 STR R9,[R7,#yjs-xjs]:LDR R9,cenzt
140 SUB R3,R3,R9:ADD R3,R3,#256*256
150 BIC R3,R3,#&30
160 LDR R4,[R6,R3,LSR#4]:FNadr(8,xjs5)
170 MUL R9,R1,R4:MOV R9,R9,ASR#6
180 STR R9,[R8,R0,ASL#2]:MUL R9,R2,R4
190 MOV R9,R9,ASR#6
200 STR R9,[R8,#yjs5-xjs5]
210 ADD R0,R0,#1:CMPT R0,#12
220 BLT sj1:]::"
```

RU

Wordsearch Creator

by Andrew Benson

We all know that wordsearches can be very challenging to complete, but putting them together can cause quite a headache. Well, this application takes all the strife out of creating wordsearches by printing a grid of letters containing up to thirty words hidden in various directions (up, down, left, right and diagonally).

The size of the grid can be defined, and you can

```
RI RQ NACS CRAGOLLEKK
OJ PFXS QMXGP MI WDBKH
RY PPS SORVHI GMKYUPT
EE JCOF XDN YCKANZ KJF
I SSC WARCHI MEDES YEJ
JMS UMWVLT PZ HBI FJLY
UI DL CRRWDRER HBXCLE
RZ NI HS WKUOEMY JZAON
QKDRS NI BYGMXRS GJ MZ
KXEYRCVRWRDDCF GOSC
YMS N WES KOAMHXXGYRQ
ZMKUAMS RFMFY AAYZHQ
BSEKMYMUBSSPCEVWVU
IUDFYDSTOWMONHSCGK
CBI WWCNWP MRQHJ XRI N
TXTNUI I MHNHL WWCZK
NANQODDZI RKYZZCAZM
YYSKVBEEBUGRUDDGOZ
```

ARCHIMEDES
BEEBUG
DISCS
MOUSE
RISCOS
WIMP

ACORN
ARCSCAN
DESKEDIT
JELLO
PROGRAMS
RISCUSER

An example wordsearch

choose the font in which to print the wordsearch from any outline fonts on your system. All this happens in a multi-tasking window in the Desktop, and printing is via the RISC OS printer drivers, allowing output to be produced on most printers. **RU**

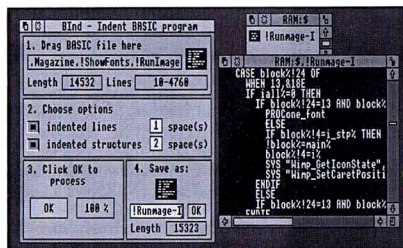
For reasons of space, these applications are only available on this month's magazine disc.

Basic Program Indenter

by Graham Crow

The Basic command LISTO allows you to indent programs according to the control structures in the program (e.g. IF-THEN and WHILE-ENDWHILE structures) and thereby improve their readability when they are listed on screen or printed out. However, the Basic Editor and text editors such as Edit and DeskEdit do not provide such a program dependent indenting facility. This application remedies this by optionally allowing spaces to be inserted at the start of each line in a program, and also allowing structures such as REPEAT-UNTIL loops and CASE-ENDCASE blocks to be indented.

The application is very simple to use, and works in a multi-tasking window in the Desktop. Options available include how many spaces to indent each line and/or structure by, so you can tailor the appearance of your listing to your taste. The



Indenting a Basic program

processing is all done automatically in the background, so you can do something else while the program is processed. When the indenting is complete, the new program can be saved away for printing, editing or running.

This application can seriously improve readability of programs and can make your programs much easier to follow, especially where nested structures are used. **RU**

PC Questions and Answers

by Lee Calcraft

Rob Wilcox writes:

I recently telephoned Acorn to ask how I might upgrade my elderly DOS 3.21 (supplied with version 1.33 of the Emulator) to something more current, such as DOS 5.0. I was firmly told that not only are DOS upgrades not available through Acorn, but that Acorn does not guarantee that the PC Emulator will work with versions of DOS more recent than 3.30. I am hoping to buy Windows 3.1 in the next month or so, but am anxious about compatibility with my old DOS 3.21.

Acorn have a problem with DOS in that recent versions of DOS cost much more to licence than the very old ones. And since they want to keep the price of the Emulator as low as possible (to keep the Archimedes range as competitive with the PC as possible) they must stick with an early DOS.

However, as last month's exploration of DOS 5 demonstrated, it works perfectly well on the Emulator (versions 1.6 onwards, at least), and at a full price of around £50 is not excessively expensive - especially in view of the excellent manual which comes with it. Microsoft do not, I believe, offer an upgrade path from Acorn's licensed versions of their OS.

As to Windows 3.1, according to Microsoft this will work with all versions of DOS from 3.1, so you should be OK there. But Windows (3.0 or 3.1) needs version 1.6 of the Emulator or later - so you will need to upgrade your Emulator. But look out for a road test of Windows 3.1 with the Emulator in next month's mag.

Peter Castleton asks about the setting of Caps Lock and Num Lock by the Emulator, and the forcible setting of the sound voice whenever you install it.

These 'features' of the Emulator were noted in our review of version 1.8, and I must admit that I find them very annoying. The Emulator seems to behave in a very non-co-operative manner, considering that it is supposed to be sharing the Desktop with other software.

There is a way around the Caps and Num Lock problems, however. When you start the

Emulator, these are both forcibly turned off. But what is worse, if you go into an editor such as Edit or DeskEdit, and put the Caps and/or Num Locks back on, as soon as you switch input focus back to the Emulator, it unsets them again.

However, if you set the Caps and Num Locks while in the Emulator to the way you want them, you can then use Edit or whatever, and go back to the Emulator without having them reset. In fact what the Emulator does each time it gains the caret is to set them to the state they were in when it last had the caret - confusing and not very co-operative. What it should do is to set the BIOS setting of these two Locks according to their current value, each time it gains the caret - that way we would not have the tail wagging the dog.

The best way to retrieve your sound settings is to create a small Obey file which puts them back the way you want them, and then run this after installing the Emulator. You may also want to reduce the number of sound channels allocated, since by allocating 2, the Emulator reduces the volume of sound output per channel. The simplest way to do this is to use the VOICES (not *Voices) command from Basic. I use the following Basic program:

```
VOICES 1
*CHANNELVOICE 1 10
*CHANNELVOICE 2 10
SOUND 1,-15,70,2
```

This sets channels 1 and 2 to voice 10 (already set up using the Zing sound module supplied with DeskEdit), and issues a confirming beep.

You can keep a file such as this in your PC directory, and just double-click on it when you want to restore your voices. This will probably be straight away, since the voice that the Emulator forces on you is the dreaded WaveSynth-Beep. Fortunately, the Emulator does not reset the sound every time that it gets the caret!

Note, by the way, that you can use *Voices from the command line to check the names of your installed voices and the channels to which they are allocated.

If you use the PC Emulator, please send us your Hints, Queries and Suggestions for this column.

RU

PenDown Plus

Reviewed by Mark Sealey

PenDown Plus is the latest implementation of Longman Logotron's Pendown word processor (first released for the Archimedes in 1989). The latest 'Plus' version contains many additions and improvements over the earlier one, principally greater control over printing, a 65,000 word dictionary, a table generator, and a mailmerge co-application. Aimed principally at the education market, PenDown Plus is claimed by the publishers to provide the "Complete Writing Solution" on the Archimedes range. It may also suit the needs of other Archimedes users seeking a moderately priced word processor.

The fundamental idea behind PenDown was for a package that was easy and intuitive to use yet capable at the same time of producing pleasing and "advanced" results. PenDown also typifies the continuing trend towards packages which are effectively blends between pure text processing (with mail merge, spellchecking and the like) and desktop publishing (with the use of graphics and layout facilities etc.).

REVIEW CRITERIA

A text handling package for use with children ought to concentrate on two features: it should be capable of outputting material in an appealing way so as to attract potential readers; it should also make the process of editing, revising and redrafting as easy as possible. It is against these criteria, and those of cost and place in the range of comparable products currently available, that PenDown Plus must be judged.

USING PENDOWN PLUS

The single disc that comes, with manuals, in the simple but colourful A4 cardboard box is *not copy protected*, though a licence number is recorded. The disc contains the PenDown application, some sample files, the dictionary and other

resources, together with the Mail, WordList and Tables co-applications.

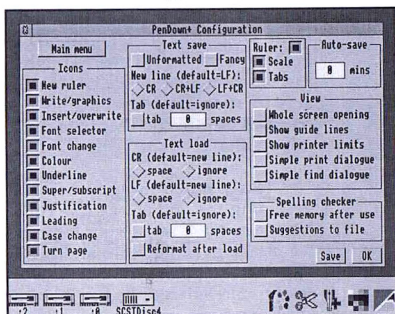


Figure 1. PenDown Plus configuration settings

PenDown Plus works with RISC OS 2 or 3 and needs a RISC OS printer driver to run with whatever printer is being used. Since graphics and outline fonts are used in PenDown Plus, this is how work will normally be printed, rather than by printing text in ASCII format (as with First Word Plus). A draft option (with minimum of effects) is available, though.

PenDown itself loads in the usual way. You then have two main choices: either loading an existing file or starting a new one. The program also gives you the option to overwrite a current document or to insert it either at the caret position or as a new chapter altogether.

If you are starting a new file, the main PenDown Plus window opens immediately. This has a horizontal icon-strip of tools across the top of the page. The caret is positioned at the top left, and it is possible to open a further set of eight menu options by clicking Menu anywhere in the window.

There is one other set of controls: clicking Menu over the PenDown Plus icon on the icon bar gives you the usual choices

(Info and Quit) plus the important *Configure* option which allows you to select various parameters, and which of the twelve tools (on the icon-strip) and their individual effects should be made available to the user (see figure 1).

That is to say, PenDown Plus can be made progressively more complex as users become more familiar with it. Needless to say, the configuration file can be saved, and sets of such start-up options could be renamed or placed on separate discs to suit users' differing needs.

Clearly much thought has gone into designing the layout of these commands. No one menu or set of icons is too crowded; the meanings of the icons are usually clear, but more importantly the meanings are easily remembered. Figure 2 shows how uncluttered and accessible this all is.

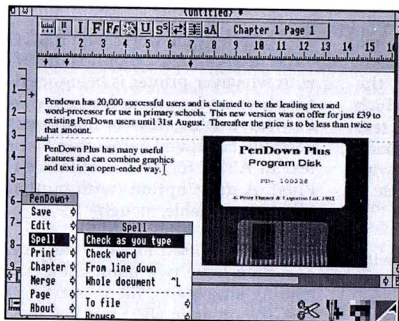


Figure 2. Using PenDown Plus showing the icon strip

THE PENDOWN PLUS 'TOOLBOX'

Longman Logotron does not call these twelve icons a toolbox, though that is what they are, as in Draw or Paint. They control aspects of page and text layout. The first (working from the left) allows new rulers to be selected and placed in a document so as to achieve multiple layouts. Margins and tabs can be easily changed and a dotted line across the document indicates the area below which the current ruler applies; the use of this function is not unlike that in First

Word Plus, although clearer. There is also a useful vertical ruler which allows you to position your text and graphics (imported as sprite or Draw files) more accurately.

Like Impression and Ovation, PenDown Plus uses the concept of *master pages*, which are separately editable and then apply variously to the document. In order for operations of this degree of complexity (to young users, at least) to be manageable, they must be extremely easy to achieve. With PenDown Plus they are, although in practice it is likely that teachers will set up default master pages for children to use - the concept of altering something that doesn't immediately change anything will be a little hard for younger users to grasp.

Other features controlled by the 'toolbox' are insert/overwrite, font management (particularly easy, and redolent of the way this is done on some of Longman Logotron's other packages, notably Magpie and PinPoint), colour control, underline, superscript and subscript, justification, leading and case change. Where appropriate, effects can be selectively applied: to a marked block, the whole document, to the current line and from the current line downwards.

One feature worthy of note is a very flexible and powerful font search and replacement option. This is a slight nod in the direction of the extended range of structuring options available in packages like Icon Technology's EasiWriter.

So far none of this is particularly original, and there are even one or two little niggles. There is no confirmation on saving when the danger of overwriting a file on disc exists. Only one file can be open at a time. It is not easy to see what "Hiding the Master Page" settings really means. Nor is resizing of graphics entirely straightforward, and deleting a graphic is non-standard (by double-clicking with Select). Indeed, each line of typed text forces a redraw of any part of a graphic on the same line on screen.

On the other hand, there are indeed many of the features that you would expect from the "Complete Writing Solution" - full cursor control and edit options (search and replace etc.), nine date formats, style sheets (like PipeDream 4's template files) which set the parameters which you might want on start-up, customisable function keys, headers and footers, automatic pagination etc. There is also a word-manipulation database (WordList) which can be used on its own or to extract text strings from any file, and perform all manner of anagrams, subgrams, counting, frequency and ordering functions. This is a gem in its own right.

PENDOWN PLUS PERFORMANCE

For a piece of software as ambitious as this to be successful it has to offer both the right features and make them as accessible to young users as can be. When all these facilities (and others including flexible and easy-to-use block manipulation, quick and comprehensive dictionary, etc.) are taken into account, the conclusion must be that this is a powerful tool, which will facilitate - and this is the crucial point - not obscure the task for which it will be employed.

MAIL MERGE

The Mail co-application is really a simple dedicated database for names and addresses. It has its own short menu relating to editing and saving a fixed template of fields (relevant to names and addresses) which is used to enter and edit the appropriate data.

This is accomplished by choosing from a predefined set of up to 20 fields (maybe a little limiting - the 'surname' field is obligatory, for instance, and 'position' and 'organisation' fields may not leave enough scope for entering all the details you might want).

Again, many teachers will want to *determine the necessary fields to smooth the passage of children towards entering their own data*. Opening the main window lets you enter and edit these details.

Once a file has been created and saved, all you need to do is drag it onto the appropriate place in the 'Merge' dialogue box within PenDown Plus itself. Merged files can then be both saved and printed directly.

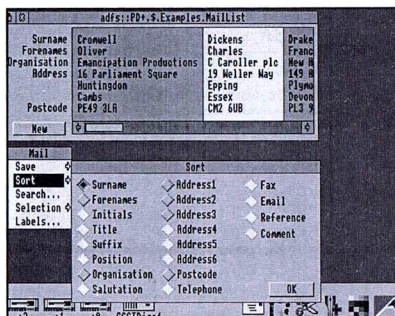


Figure 3. The mail merge application in use

To sum up, the compromises made by the publishers to achieve a range of useful facilities while maintaining ease of use are excellent. What can be an intimidating operation on word processing, computer literacy and familiarisation courses for adults, let alone for school age users is here accomplished simply and very effectively thanks to the use of the good old Wimp (see figure 3).

TABLE CREATOR

Creating tables in word processing and DTP environments can be notoriously difficult: virtually impossible with Wordwise, hard in First Word Plus and the subject of a separate supplement to Impression II, although very simple and effective in PipeDream.

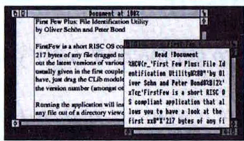
The table creator supplied as part of this package is a simple utility that can also function as a very basic spreadsheet. This means that cells, columns and rows can *have arithmetical operations performed on them*. They will expand and contract automatically to accommodate the data

Continued on page 63

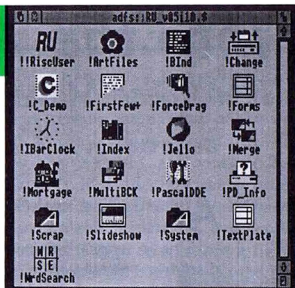
October 1992

FirstFew Plus

An enhanced version of the FirstFew application, originally published in RISC User 5:7, which displays the first 217 bytes of any file dragged to its icon. The new feature allows Impression documents to be identified as well by displaying the first 217 bytes of the document, which is not normally possible due to the way Impression stores its files as applications.



This month's disc menu



TextPlate and Forms Designer Applications

The following based diagram has been prepared using a text editor and the form designer. (Note: The form designer is not included in the program but is in the 'Forms' directory for a full description of how the program works.)

Day	Date	Temperature (F)	Humidity (%)
Sunday	26/9/92	21°	57
Monday	1/10/92	22°	77
Tuesday	2/10/92	25°	97
Wednesday	3/10/92	28°	77
Thursday	4/10/92	17°	27
Friday	5/10/92	14°	27
Saturday	6/10/92	25°	18°
Weekly average:	21°	57	42

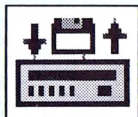
Click mouse for another demonstration...

The TextPlate application allows files produced by the Forms Designer (published in RISC User 4:9 and provided on this disc) to be printed out from Basic using the

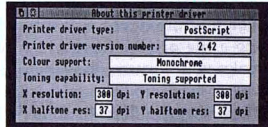
library of routines provided. This can be very useful for creating neat screen displays, and a demonstration program is included with the application.

SCSI Change

Removable SCSI hard drives are an excellent idea, but any click on the SCSI drive icon with no disc in the drive gives a 'Drive Not Ready' or 'Drive Empty' error. The Filer module treats this as fatal and will no longer access the drive even if you do put a disc in. However, this application re-initialises the SCSI drive, overcoming this problem.



Printer Driver Info Application



This handy little application displays information about the currently installed

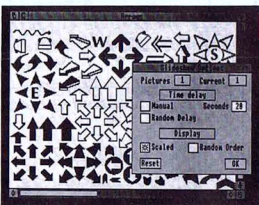
printer driver module in a window in the Desktop. The information shown is the name and version of the printer driver module, whether the driver has support for colour, the toning capability of the driver, and the resolutions for printing.

Enhanced Icon Bar Clock



This icon bar clock has a pleasing analogue and/or digital face, and allows the CMOS clock to be set easily from the Desktop. It makes a refreshing change to Acorn's Alarm application, and uses much less memory.

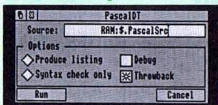
SlideShow Sprite Carousel



SlideShow is a RISC OS compliant application which will display a carousel of images either automatically or under user control. The images can be

either sprites or Draw files and up to 200 can be loaded into SlideShow at a time. The sequence of pictures can be set to display in order with a pre-determined interval between each, or alternatively the user can browse backwards and forwards through the sequence.

Pascal Compiler DDE Frontend



Originally published on the RISC User Disc 5:7, this DDE front end for the Acorn ISO Pascal release 2 compiler has been improved in a

number of small ways. It allows the Pascal compiler to multi-task in the same way as the Desktop C and Desktop Assembler compilers.

Example ArtWorks Files

Two small Draw files produced by ArtWorks from Computer Concepts (see the review in this issue). The files demonstrate the envelope and perspective features.



ArcScan Data ArcScan indexes for this issue of RISC User and BEEBUG Vol.11 No.4.

and a selection of bonus items for only **£4.75**

Into the Arc

Hard Disc Management

David Cawsey looks at how to get the best out of your hard disc.

A hard disc makes life with your Archimedes much easier, especially if you have upgraded from a single floppy disc drive. However, managing the files has its problems, and the following paragraphs will discuss these problems and set out some suggestions for overcoming them. It is well worth while devoting a little time to devising a file organisation which will not only make your system friendly to use, but also easy to back up. The principles which this article suggests lead to some solutions which differ somewhat from those given in related articles such as *Auto-booting the Desktop* (RISC User 5:8), and *See Apps/Run Apps* (RISC User 4:8). The approach is somewhat more 'object-orientated'.

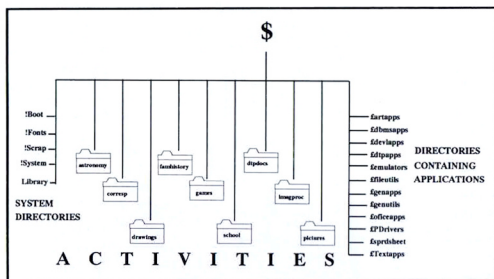


Figure 1. Example hard disc structure

THE DIRECTORY STRUCTURE

From the point of view of ease of use, there are strong advantages in setting up a directory structure providing 'folders' which match the uses which we make of the machine. Figure 1 shows an example of a root directory structure. It contains 3 groups of directories. Firstly there are the system directories (!Boot, !Fonts, !Scrap, !System, and Library). Secondly we have a set of personalised directories which will hold our

working files on the activities concerned. These may well contain a mixture of files generated by different types of application. Lastly we have directories containing the categorised applications; these directories should not (in general) be used for working files containing our text, data, drawings etc. Starting the names with a '!', or some other punctuation character, helps to identify these directories. We shall see later that backup is eased by separating the applications from the working files.

THE BOOT APPLICATION

We now have a problem to overcome, since the filer will not normally have 'seen' an application if we open one of our working directories. One method of solving this was described in *See Apps/Run Apps*, but this requires applications to be placed in special !SeeApps and !RunApps directories. An alternative which is better suited to a directory structure such as in Figure 1 is the use of a boot application, as described in RISC User 5:8. We create a directory called !Boot, which contains an Obey file called !Run, and a text file called DeskBoot.

The !Run file contains the following two lines:

```
Run adfs::HardDisc.$.!System
Desktop -file adfs::HardDisc.$.!Boot.
```

Desktop

HardDisc (and possibly the name of the filing system used) will need to be changed to your particular hard disc name. DeskBoot contains a sequence such as the following:

```
| First start wanted utilities
Run adfs::HardDisc.$.!PDrivers.!PrinterDM
Run adfs::HardDisc.$.!Officeapps.!Alarm
```

```
Run adfs::HardDisc.$.fGenutils.!Mouse
|
| Start Edit, accessing system font only
Run adfs::HardDisc.$.fTextApps.editors.!E
dit
|
| Run boot files of applications
| which are to be 'seen' by filer
Run adfs::HardDisc.$.fTextApps.WdProcsrs.
!1stWord+.!Boot
Run adfs::HardDisc.$.fdbmsapps.mstorevn2.
!Multistor.!Boot
|
| Run boot file of !Fonts
Run adfs::HardDisc.$.!Fonts.!Boot
|
| Now set up applications which need outl
ine fonts
Run adfs::HardDisc.$.fdtpapps.Drawapps.!D
raw.
Run adfs::HardDisc.$.fdtpapps.impression.
!Impress.!Boot
|
| Now open the root directory window on t
he Desktop
Filer_OpenDir adfs::HardDisc.$
```

This achieves the same result as Run Apps/See Apps in the previous article, though of course this boot file must be amended if a new application is to be 'seen' or 'run' from boot up (with Run Apps/See Apps, any application installed in a special directory would automatically be seen or run). Note that the placing of the line dealing with Impression in the above text allows for the possibility that we might want to edit this line to run Impression at boot up (simply by removing the characters "!.!Boot" from the line).

Thus, booting this system installs certain selected applications on the icon bar, and 'sees' others. We can open any of the 'activity' directories which contain, for example, drawings, word processed documents, database files or Impression files, and run the appropriate applications by double-clicking on the files without

previously opening the application directories themselves. There is substantial advantage in creating some empty objects as prototypes in the 'activity' directories. If Draw files, for example, are going to be created regularly in a directory, then create an empty Draw file called (say) *EmptyDraw*, lock it against deletion and remove write access. To start Draw and create a new drawing, we double-click on this prototype already located in the right directory, and on completion save the new drawing with a new file name. There is no need to find the directory window, or drag-save, since Draw will already be aware of the path to the wanted directory.

The overall result is that the majority of work can be done in the working (activity-based) directories, without ever opening the application directories. For example if we take the *famhistory* directory in the above example structure, this might contain databases, drawings, DTP documents, word processed files and sprite files (and empty prototypes of relevant types). The general purpose applications themselves will be elsewhere, and will be transparently activated by double-clicking on a file. Of course there will still be occasions when it becomes necessary to enter an application's directory, and one might also choose to house a specialist application such as a family history database manager (e.g. Ancestry) within the working directory.

ADDING NEW SOFTWARE

When new software is acquired, it may well be obvious where to install it as a 'permanent' facility. More often, however, the new software may be something to try out (e.g. a Public Domain item from a magazine disc). It makes sense to have a directory (called, say, *Temporary*) in which such items can be initially installed for the time being. This directory should be reviewed from time to time to decide whether to discard items from the hard disc, or to install them in a more suitable place as a long term facility.

BACKUP

The question of backup is most important. We all know that backups must be made regularly, but it is very easy to let the weeks slip by without performing this chore; it can be time consuming, even with the good utilities which are available, and with the use of incremental backups. How then can we make the backup process as easy as possible? The answer must be to back up as few files as possible, keeping the number of floppy discs to a minimum. There is obviously no point in backing up items such as installed applications, where we hold master copies. Hence a backup utility will normally provide for an *exclude* file containing a list of files and directories which we do not wish to backup; it will help to have a file organisation such as the above, in which applications and data are easily separated, with a few directories containing groups of applications. The exclude list can then be short and unchanging. For the example structure above, all the directories prefixed with 'E' would be included in the exclude list. Of course the penalty is that restoring the system is far less easy than if we have a complete disc image (as we might have on a tape streamer), but of course we hope we will never have to do it! It is wise however, to keep some record of the file organisation to assist the rebuilding operation, should it ever be necessary.

Backup is also easier if we do not allow the hard disc to become cluttered with old

material which we are unlikely to use in the next few months. There is little point in backing up old files which we could archive (or scrap) and remove from the hard disc, at the same time reducing the confusion caused by directories full of files with long-forgotten names and functions.

Just before backing up is a good time to review directories such as *Temporary* (see above), and to consider whether old versions of files can be discarded. Remember, for example, that the Desktop allows us to arrange a directory in date order (via the Filer's Display submenu); hence it is very easy to select all correspondence more than, say, 3 months old, archive it to a floppy, and delete it from the hard disc.

Also, from the point of view of making best use of the storage space available, it may not be sensible to keep some applications on the hard disc if they are only rarely used. My own experience is that at any one time, I use 25-30Mb of a 40Mb hard disc, but have nearly 100 floppy discs containing masters, archives and rarely used applications and data; my full (as distinct from incremental) backups only take about seven 800K floppies (uncompressed).

Editor's Note: This is a personal view of hard disc management, and as such is not a definitive method. If you have any comments on this system, please do let us know.

• POINTS ARISING • POINTS ARISING • POINTS ARISING •

GiantFile and GiantRead (Volume 5 Issue 7 Disc Only)

These applications have problems with Acorn's SCSI card (as used in the A540), though they work correctly with other makes of SCSI interface and all other filing systems. To enable them to work with Acorn's SCSI card, change the SYS string "XSCSI_DescribeDisc" to "XSCSIFS_DescribeDisc" in the following lines:

1890 & 4680 for GiantFile

1520 & 3670 for GiantRead

Note that changing these lines will stop the programs working on other SCSI boards.

ArcScan File for RISC User 5:9

There is a small problem with this data file that will cause future data to be ignored. The fix is to drag file *RUvol05* from within your *RUData* directory into Edit, and to perform a global search and replace with the search string *colours[]* and replace string *colours()*, before resaving.

RU

THE BEST PROGRAM AND TEXT EDITOR FOR THE ARC HAS JUST GOT A LOT BETTER

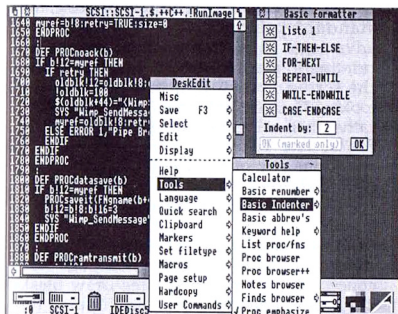
NEW DeskEdit 2

A major new release of the popular and powerful editor DeskEdit brings a whole toolkit of features that will assist all programmers, whether novice or experienced, and whether using Basic or C - and all within Acorn's powerful multi-tasking RISC OS Desktop. There is a lot for text users too.

New features include:

- Basic program Renumber** - and for a partial renumber, just mark a section.
- Basic Program Indenter** - automatically reformats Basic programs to indent after IF THEN, REPEAT, FOR etc. - all fully customisable.
- Basic Abbreviations** - all Basic V's several hundred abbreviations are implemented (optionally). Just type P. and if you are in Basic it will change into the keyword PRINT.
- Programmer's Calculator** - a powerful calculator especially designed for handling bits and bytes. Ideal for setting flag bits etc. Simultaneously operates in decimal, hex and binary, and can import and export results to and from any text window.
- Multi-purpose Browsers** - Press F2, and enter a search string. This brings up a browser window containing a list of finds. Click on any one of these and you are taken to the corresponding place in your source or text file.

Alternatively Shift-F2 puts up a new browser window containing a list of all the functions and procedures defined in your source. Again, click on any one, and you will be taken straight to it.



Using DeskEdit's new Tools

- Throwback** is fully implemented so DeskEdit can respond to messages from C compilers etc.
- !FIND** - DeskEdit comes with a powerful stand-alone Acorn application called *Find*, which can find text strings in a whole group of files, just given a wildcarded filename.

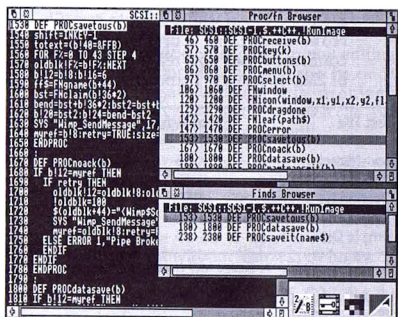
DeskEdit picks up the output from *Find*, and displays a window with all the finds. Just click on any find in the window, and the file will be automatically loaded into DeskEdit (if it is not already there), and the caret will be placed at the find.

- Extended Saves** - DeskEdit 2 will (optionally) save a special data file each time you make a normal save. Next time you load your file, not only will the caret be where it was when you saved it, but wordwrap will be correctly set, all markers will be set to their previous positions, and pressing Undo will actually take you through what you did when you last edited your file!

And there is much more that is new in DeskEdit 2. A new Keyword Help can now give help on any keyword marked in your text. A full Basic Help file is included.

The first line of Function and Procedure definitions can be highlighted in a printout. QuickSearch can now be performed backwards as well as forwards, and can find procedure and function definitions which may supply the string. You can even use a marked piece of source the target string for a Quicksearch.

Shift-Delete deletes to the end of a line, Ctrl-Delete deletes to the start of a line, and Shift-Ctrl-Delete deletes left and appends to the line above. Shift-Backspace performs an intelligent word-delete. There are new tabbing options etc. etc. - All designed to make editing fast and efficient.



The new Browsers in use

All this of course is in addition to the features that have made DeskEdit so popular among users of Acorn machines, and which resulted in glowing reviews when it was first launched a year ago. In fact DeskEdit is so good that it is used within Acorn itself.

Come and see DeskEdit 2 on RISC Developments stand (20/21) at The Acorn User Show

DeskEdit 2 will be available from 1st October. Prices to RISC User readers:

PDE2b £26.95 inc VAT + p&p
PDE2a £9.95 inc VAT + p&p (upgrade*)

* Includes disc, new manual, keystrip and quick reference card.

* Return original disc with order to:

RISC Developments Ltd. 117 Hatfield Road, St Albans, Herts AL1 4JS

Turbo Printing with the BJ-10e Printer

Mike Williams assesses the latest Turbo Driver from Computer Concepts.

For some while now I have been using a Canon BJ-10e bubble-jet printer with my floppy based A310 at home, and I was therefore delighted to have the chance to try out Computer Concepts' new Turbo Driver for this printer.

The Turbo Driver kit consists of a specially wired cable to connect printer to computer and two discs, one containing the Turbo Driver and test files, the other the outline font manager (!Fonts) and three fonts (Corpus, Homerton and Trinity). There is also a short but adequate 14 page manual, and the whole lot is packed in an attractive box.

To my initial disappointment, it proved impossible to use the Turbo Driver on my 1Mb A310. The test file printed with no problems, but there was insufficient memory to print a moderate text file direct from DeskEdit. Consultation with CC confirmed that you really need a minimum of 2Mb to use the Turbo Driver.

Test File	Std Driver	Turbo Driver	
	Print Time	Print Time	Release Time
Text (direct)	65	140	3
Text (DeskEdit)	62	115	3
Ovation (with graphics)	190	175	20
Sprite (164K)	140	115	18
Simple Draw File	35	30	3

Table 1. Selected timings in seconds

The rest of this review thus relates to my experiences with an A5000 (with hard disc) in the RISC User office. Using the standard BJ-10e printer driver as supplied with the A5000 and Computer Concepts' Turbo Driver, I carried out a series of timing tests (see table 1). In general, the Turbo Driver offered only a limited improvement in overall print time, but because it is able to print in the background, the time before the system was released for further use was significantly reduced, typically to around 20 seconds for a page which might take 175 seconds to print. Thus the Turbo Driver can offer a major improvement in productivity

where your machine would otherwise spend lengthy periods tied up with printing.

When it came to simple text printing, the standard printer driver still has some advantages as the Turbo Driver handles all printing in graphics mode, thus converting the screen system font to a rather weak looking Courier (the font is user selectable), rather than using one of the BJ-10e's built-in fonts. The Turbo Driver also failed to recognise any of the DeskEdit embedded style codes (which are the standard codes used by Acorn printer drivers).

As for quality, there was hardly any difference as far as the Ovation page was concerned (incorporating three Draw files). The sprite used was a full screen dump (of PenDown Plus). That produced by the Turbo Driver was darker, and the darker shades were more uniform than with the standard driver. However, the standard driver gave better contrast, and in my view (in this instance) produced the more pleasing result. Other differences were minimal.

CONCLUSIONS

Although printing time as a whole is only slightly improved, the fact that the machine is released for further use after only such a short period is very useful, particularly where lengthy documents are concerned. The increase in usage obtained is invaluable.

Against this, if you do much text printing, and your other print requirements are moderate, then the Turbo Driver has less to offer - it is a pity CC does not support text printing more fully. Overall though, the Turbo Driver is an excellent product.

Product Supplier	Turbo Driver (BJ-10e/BJ-10ex) Computer Concepts Gaddesden Place, Hemel Hempstead, Herts HP2 6EX. Tel. (0442) 63933
Price	£49.00 ex. VAT

RU

Edit and DeskEdit Hints

Rounded up by Lee Calcraft

The letters E & D have been used to indicate which of the two editors each hint refers to.

E/D FINDING SPACES AT THE ENDS OF LINES

If you want to eliminate spaces at the end of source code lines, one good way to show them up is to mark the whole text. Any spaces will then be clearly visible. You could also search for the two-character sequence *space-newline*.

D SHIFT-DRAG INSERTS FULL FILENAME

If you drag a file to a DeskEdit window with Shift held down, the file will not be loaded, but its filename (including the full pathname) will be put into the text at the caret. This is particularly handy when editing Boot files and the like.

E/D ADJUST-CLOSE TO OPEN DIRECTORY

If you close an Edit or DeskEdit window with Adjust rather than Select, the window will close as usual, but the directory that the file came from (or was last saved to) will be opened and/or brought to the top of the stack, just as with a filer window.

D NEAT BASIC PROGRAM LISTINGS

If you set DeskEdit's *Overhang* parameter in the Page Setup dialogue box to -2, your printed Basic listings will take on a similar look to those listed directly from Basic. Note also that you can include DeskEdit printer codes within a Basic program to embolden, italicise and underline chosen sections. Simply put a suitable code on a REM line - any of the <I> codes will work.

E/D WINDOW SHRINKING

We have mentioned before that if you set the *Right justify* flag on Edit's or DeskEdit's text window using a template editor, you will still be able to read the leafname in the title when the window has been shrunk to a very small size. This is handy since it means you can 'park' a number of shrunken windows on the Desktop when not in use, and still see the name of the file that they refer to.

You can extend this idea by adjusting the size and position of the text window template (again using a template editor). Try making it about one inch high by about two inches across, and locate it at the far left-hand side of the screen. This will mean that when text files are loaded, they will park themselves conveniently away, ready for use. With DeskEdit you can further capitalise on this trick by supplying a list of files to load at start-up from a boot file (Edit will only let you nominate one) - all will then be neatly parked in a corner instead of cluttering the whole Desktop.

E/D USES FOR UNDO

The Undo feature in both Edit and DeskEdit can be very handy for moving to a part of your text or source, checking on it, and then moving back to where you were. Simply move to where you want to go, observe, and use Undo to take you back.

You cannot of course perform any editing on your visit, since that would also be undone. DeskEdit gets around this problem by providing invisible markers which can mark a chosen position for return at will.

There are also two features of DeskEdit whose activities are 'unknown' to Undo: Undelete and the Clipboard. This means that you can use either of these features to 'collect' some text, then use Undo to take you back to your starting point without losing your booty.

E/D HOW MANY CHARS ON A LINE?

To determine the position of a particular character on a line (i.e. to find its column number), press F5 with the caret at the chosen character. Note the character count, then move the caret to the start of the line, press F5 again, and subtract.

D CONFIRMING WINDOW CLOSURE

Holding Ctrl while clicking on a DeskEdit window's Close icon closes the window without asking for confirmation. But if you close it *without* using Ctrl, you can still duck answering the question and force a window closure by pressing Ctrl and clicking a second time on the Close icon.

RU

RISC User Public Domain Library

★ NEW LOW PRICES ★ NEW LOW PRICES ★ NEW LOW PRICES ★ NEW LOW PRICES ★

Our Public Domain discs contain as near as possible to 800k (and not less than 700k). Each disc includes a 'Read Me' file, and there are some instructions with the programs. The discs are offered as seen and are available to RISC User members only for the low price of **£1.60**.

To order tel. 0727 40303, fax 0727 860263, or write (quoting memb. no) to:
RISC Developments, 117 Hatfield Road, St. Albans, Herts AL1 4JS.

★ NEW ADDITIONS TO THE RISC USER PD LIBRARY ★

GRAPHICS

PD45 Disc UPDATED

Contains two applications, Creator and Translator, which allow the exchange and display of graphics picture files between the Archimedes and other computers. Along with these are some high quality demo pictures. Also, included, are a mode converter and a mode utility allowing multisync modes to be displayed on a non-multisync monitor.

PD51 Disc

Contains a set of fractal demos par-excellence. Dazzling!

DRAWING AND ART

PD41 Disc UPDATED

Contains four applications: 'Display' allows the display of Draw files by dragging them

into a window. 'Drawplus' is an object oriented drawing package that may be used as an alternative to Acorn's Draw supplied with your Archimedes or A3000. Drawplus has many enhancements over Draw. 'Drawstrip' is a program to enable the easy creation of function keystrips using Draw. 'Drop' enables Draw files to be rotated in 3D and then saved again in their new perspective.

GAMES

PD48 Disc

Contains a demo version of the game Bambuzzle from Arxe Systems.

CLIP ART AND PICTURES

PD49 Disc

Contains 69 varied sprite pictures for use in DTP etc.

UTILITIES AND APPLICATIONS

PD50 Disc

Contains 29 disc utilities. Access sets multiple file /directory attributes, Bin is a dustbin utility, ChDir changes directories, Compact provides a full disc compacter, Compare allows comparison of two files, Dir sets the current directory, DiscCat is for maintaining a catalogue of your floppies, DiskEdit is a disc sector editor, DiscUtils is a disc copier, Disk Clone is another disc copier, Disktree shows tree directory structure of any disc, Dpaker is a disc compression util, Dustbin is yet another bin utility, FileAct performs various actions to files dragged to it's icon, FileFind is self-explanatory, Filer is a general disc utility, Filetype changes filetypes from the Desktop, Filetypes sets types and stamps files, Go moves to any directory, GuessType will try to guess the type of a file dragged to it's icon, Locksmith allows locking of directories, Menon is a sticky backdrop-type menu application, NewSet-ty is another settype util, Options allows easy change copy and wipe options, Stamp is a Desktop filestamper, and finally, StickyBD is a sticky backdrop program.

of DOS discs, GreyEdit for editing 256 greyscale images, Larger for making your Desktop - yes, larger! PickaPic a sprite selection database, SetTime yet another Desktop clock, Showtrack a spectrum analyser, Sprd a sprite editor and StrongEd, a powerful text editor.

PD55 Disc

Contains Appdock, a kind of sticky backdrop, a Desktop clock called ArmClock, Filetypes that will try to recognise filetypes, a memory checker called Free, a utility called Headphone to allow control of speakers and headphones, an IconClock, a Memory editor, a util called ModelInfo that gives details about current screen mode, a sound Module player, a program called Packdir which packs directories, a RAM disc controller, and finally, a utility to delete all data on a floppy quickly without using Delete or re-formatting.

FONTS

PD53 Disc

Contains 13 RISC OS 3 fonts and a few 'filler' programs including a graphic adventure and an electronic index to the RISC OS 2 PRMs.

Sampler Disc (PD51)

Contains the following sample programs from our Public Domain Software Library:
SoundTracker, Accounts, SC Label, Follow, Hangman, Multiprint, Rotate, STD and Wanda

Public Domain Special Collection

The selected PD software listed below was fully described in Simon Burrows' article on the PD scene in RISC User 5:7 (June 1992).

PDX1	Draw Plus Label	Extended Draw Label printing
PDX2	Address D AGP Daily Draw Cross Memphis Translatr	Address labels Advanced graph plotter Screen clock Crossword generator RAM filing system Graphics image converter
PDX3	ArcFS Risc BBS Impulse II	Decompression utility Bulletin board system Inter-task communication
PDX4	ArcFS PVray	Decompression utility Ray tracing
PDX5	Hangman Interface Menu	Classic game Classy Wimp display Wimp Menu editor

These discs are still available at the standard price of **£1.60** (inc. VAT and p&p).

Public Domain Special Collection

PD52 Disc

Contains DisclInfo, a program that provides extensive information about any disc, ExtFiler allows control of various filing functions, GraphDraw is self-explanatory, and finally, Unimode is a sophisticated screen mode generator.

PD54 Disc

Contains Dimwit a screen saver program, DosFS allowing reading and writing

All other PD discs remain available

The 80 Column

Our regular round-up of printer-related items, compiled by Alan Wrigley.

PROPORTIONAL SPACING

First of all this month, I would like to take up a point raised in *Pin Board* (RISC User 5:8) concerning proportionally spaced printing on a dot matrix printer. Many printers now offer this feature, but unless you write your own software, it is almost impossible to use it properly. Standard printer typefaces are monospaced - every character in the set is the same width (filled out with blank dots if necessary) and the spacing between any two characters is identical. This applies to both draft and NLQ printing. You can justify lines of text by adding extra spaces between some words; alternatively some software can use microspacing. This involves adjusting the width of each space in the line by a similar amount (using graphics printing) to pad out the line to a uniform length. Some printers include a justification command which does this automatically.

Whatever you do with the spaces, the characters themselves remain the same width. True proportional spacing is only possible by having a second character set in the printer, in which the width of each character is dependent on its shape; "m" is wider than "i" for example. This set can be switched in by sending the code sequence for proportional printing, but to use it effectively, the software needs to know the width of every character in the set in order to calculate the positions of the line breaks. To make matters worse, there is no standardisation between different printers on character widths. Tabbing is also difficult since tabs are usually based on a fixed number of spaces.

If you are writing your own software, you can build in a character width table for your own printer. The widths can be calculated in the first instance by printing out each character a number of times in a row, and

dividing the length of the row by the number. I know of no commercial software which enables you to use proportional printing in this way, and I doubt if anyone would consider it worth writing any.

PRINTER FONTS

Another area which can cause some confusion among users is the range of fonts which is often provided on printers nowadays. From time to time readers ask how they can gain access to these fonts when printing from an Archimedes.

The first thing to consider is that when printing from a DTP or graphics package, or indeed any software where you are essentially dumping the image on the screen to paper, the printer is in graphics mode. In other words, the image is built up as a sequence of dots, and the printer's built-in fonts have no relevance at all. In fact, since you are able with this method to reproduce on paper any of the Arc's outline fonts (albeit at the expense of very slow printing), you don't need the printer's own fonts anyway.

Text printing on the other hand (e.g. from DeskEdit, 1st Word Plus or by dragging a text file to the printer driver) can make use of the printer's fonts, but you must be able to tell the printer to select the font you require. The simplest way to do this is to alter the *PrData* file in such a way that the text job prologue contains the code sequence to set the required font. For example, if the sequence to set Courier is *ESC "k" 1*, then all you need to do is include *<27>k<1>* in the string which defines *nlq_job_prologue*.

It is also quite feasible to incorporate codes into your own documents to set different fonts as you print. I will describe how to do this in a future 80 Column. **RU**

Creating Decorative Corners for Impression Junior

David Symes shows how to liven up your corners in Impression Junior.

There are discs of borders available for use within Impression II, but those of us who use Impression Junior are not so lucky; we have only the ten borders that reside in the application.

So why not create your own decorative corners to illuminate the page, and then if you want to add a bit of style to the Junior default borders, add your decorative corners to them? The technique is quite straightforward, and surprisingly interesting things can be created out of simple objects.

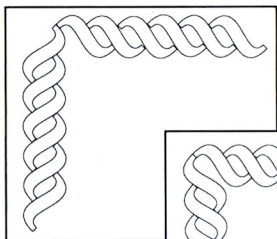


Figure 2

There are two paths open to you, and both require the use of Draw. The first is to create your own objects by drawing them by hand, which is all right if you are an artist. The second and by far the easiest to use is the utility provided by Computer Concepts on Junior disc number two. The directory *Utils* contains FontDraw, which will make a Draw object out of a font character. The RISC User application DrawFont (on the Volume 4 Issue 8 magazine disc and the

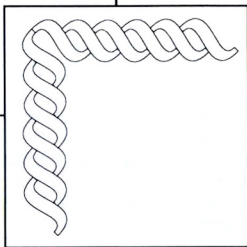


Figure 3

Volume 4 Special Disc) will perform the same task.

My example illustrated in this article uses the humble tilde (the wavy line key directly below Esc on the keyboard) which as you will see can be manipulated into an interesting and aesthetically pleasing corner piece.

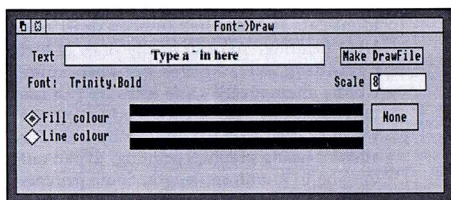


Figure 1. FontDraw's main window

CREATING AN OBJECT

Double-click on FontDraw and you are presented with a default window, as shown in figure 1. Click Menu over *Font*: and choose *Trinity.Bold*. Insert a tilde (~) into the writable *Text* box, and then change the number in the writable *Scale* box to 8. The *Fill colour* should be white, so click and drag each of the three sliders, red, green and blue fully to the right so they are completely filled. (Alternatively if you want your object transparent click on *None*.) Next, click on the *Line colour* radio button; the line colour should be black, so make sure the sliders are empty. Finally, click on the *Make DrawFile* icon and save the resulting Draw file.

MANIPULATING THE OBJECT

Load and configure Draw to your requirements, and import the Draw file of your object into Draw. Next highlight the arrow in Draw's toolbox by clicking with

Select, and select the tilde object. Then rotate the object through -45 degrees via the *Select* submenu, and with the object still selected use the *Select* submenu to make five copies of it (using the adjust mouse button). Select each of these copies in turn and move them below the main object in an aesthetically pleasing pattern. Small position adjustments can be made by zooming to 3:1, positioning the pointer over the object, and, while holding the Select button down, move the object by pressing the relevant cursor key. Now select all the objects (from the *Select* submenu) and group them all so that they become one object. Next make a copy of this object, and with one of the two new objects selected, rotate it through 90 degrees. Move the vertical object until its top point mates with the left end point of the horizontal object, as in figure 2.

This is quite a pleasing shape, but its appearance can be enhanced by reversing the vertical object to give the appearance in figure 3. This is achieved via the *X scale* entry in the *Select* submenu, by changing the entry to a minus figure, e.g. -1.0, and then mating the ends again. Group the two separate objects so that they become one. Finally save the selection to disc as *TildeTop*. To create the pattern for the bottom border, make sure the object is still selected and rotate it through 180 degrees. This selection should be saved as *TildeBott*.

There are many Font characters that make interesting and pleasing objects. For

Where in the World are my Underpants

*One of the unsolved mysteries of the universe,
that missing sock, that missing underwear.
Where do they go?*

There's a hole to another dimension
in the room that I sleep in at night,
a creature creeps out while I'm sleeping,
and makes off with my pants. What a plight!

So I've looked and I've poked and I've prodded
at the walls, ceiling, floors and the light
but I can't find the hole or the creature
who creeps out for my pants in the night.

Now maybe in this other dimension
where things are so different, alright.
They don't have their own Marks and Spencers
so they steal my old pants every night.

Perhaps it's cold premonition
that things will get worse, what a fright!
When they come from their secret dimension
for my pants and my vests in the night.

(C) DAS

Figure 4

example, try the exclamation mark, curly brackets or the $\square$ character on the £ key.

PREPARING AND IMPORTING INTO IMPRESSION JUNIOR

Load Impression Junior onto the icon bar, and bring up your usual page template. For a one off page, create a new frame about 35mm square and position it at the top left corner of your page. Make a copy of

the frame and position it in the bottom right corner. If you intend to use multiple pages, then these should be repeating frames.

Whatever type of frame you decide is appropriate, use the *Alter Frame* option from the Frame submenu to switch off Repel text and make the frame transparent. Activate each frame in turn and drag the appropriate Draw file into it, with *TildeTop* to the top left and *TildeBott* to the bottom right. The final positioning and fitting of the graphic will largely depend on your page and printer setup, so a little experimentation is required by repositioning the frame and using the *Alter graphic* option in the *Frame* submenu to fill the frame or change its size. When you have finished, switch on *Lock aspect* in the *Alter graphic* box. The same technique can be used to manipulate and position any objects you might want to draw for your corners.

MIXING THE CORNERS WITH THE BUILT-IN BORDERS

Impression Junior contains ten built-in borders, which can, with a little thought, be combined with your own corners to enhance their rather plain appearance. Selecting a Junior border with the corner frames transparent and at the top of the frame stack will give the impression that the corners are woven around the border.

Selecting a border with the corner frames set to colour, and making sure they are on the top of the frame stack, will give the appearance of the border stopping at the decorative corner; a little adjustment of frame and border positions will probably be necessary to ensure they mate correctly. The only limit is your imagination.

RU

Acorn Portable Computer

We have recently published an article giving full technical details of the newly-launched Acorn Portable Computer. If you would like a copy of the article, we would be happy to send you a reprint. Just fill in the box below.

Please send me a free reprint of the article about Acorn's new portable.

Name.....

Address.....

.....

.....

Postcode..... RU

Norwich Computer Services

96a Vauxhall Street, Norwich NR2 2SD.

Phone 0603-766592, Fax 0603-764011

Using ANSI C

Part 14: Writing Relocatable Modules in C

by Lee Calcraft

Although it is usual to write relocatable modules in ARM assembler, it is perfectly feasible to write them in C. The advantages of this can be enormous, both in the clarity of source code, the much shorter development times, the great availability of ready-made functions (such as those in CLib), and finally the portability of the source.

Nothing in life is free however: the length of the final executable will be a good bit longer than its assembler counterpart, and its speed of execution will be somewhat slower. But when such factors are not paramount, C can provide a neat shortcut to producing modules for the Arc.

DOING IT IN C

As you may know, relocatable modules contain a header which gives the entry addresses of all supported features. This includes the names of each star command known to the module, and the address within the module which is to be called when a matching star command is issued.

It would be virtually impossible to generate such a header directly in C, and Acorn have very conveniently provided a special application in the DDE suite called CMHG (for C Module Header Generator). This takes as input a description file in plain text format which specifies the features supported by the module, including the names of star commands, the address of its SWI block (if used), and the names of the user's C functions which are to be called to service them.

CMHG generates an object file, and this is simply linked in with your own object files to create the module.

```
;CMHG description file for test module
help-string: Test_Module 1.00
title-string: TestModule
command-keyword-table: star_cmnd

    to_hex(min-args:1, max-args:1,
           help-text: "Syntax:\tto_hex
<decimal number>\n"),

    err(min-args:0, max-args:0,
        help-text: "Syntax:\terr\n")
```

Figure 1. CMHG description file

A PRACTICAL EXAMPLE

To demonstrate just how simple this is to use in practice, we will create a test module which responds to the two star commands:

```
*to_hex
and
*err
```

The first will convert a supplied decimal number into hex, while the second will report an error (to illustrate the way in which module errors must be handled).

We will begin by considering the CMHG description file. As you can see from figure 1, this is a relatively simple affair. It contains a number of keywords (identifiable by a following colon and the use of hyphens in their names) followed in most cases by one or more parameters.

The first two lines of the file:

```
help-string: Test_Module 1.00
```

```
title-string: TestModule
```

give the help and title strings of the module.

These are the strings which appear when you type:

```
*help modules
```

and

```
*modules
```

The underscores are translated into spaces in the display itself.

```
/* Test module with star commands */

#include <kernel.h>
#include <stdio.h>
#include <stdlib.h>

#define MOD_NAME "TestModule"

enum {
    to_hex,
    err };

static _kernel_oserror tm_error= {
    123456,
    "Error from " MOD_NAME
};

/* arg_str is argument string */
/* arg_c is no of arguments */

_kernel_oserror *star_cmnd(char *arg_s,\
    int arg_c,int cmnd_no,void *p_word)
{
    int n;

    switch (cmnd_no)
    {
        case to_hex:
            n=atoi(arg_s);
            printf("Hex: %x\n",n);
            break;

        case err:
            return &tm_error;
    }

    return 0; /* no errors so return zero */
}
```

Figure 2. Complete C source for the module

The third entry in our file:

```
command-keyword-table: star_cmnd
```

supplies the name of the function in our code which will be called when a matching star command is encountered. Finally, there follows a table of star command names recognised by the module. Each command is also accompanied by a string which will be used by the module in response to a command of the form:

```
*help <command name>
```

The minimum and maximum number of arguments for each command is also specified. If the number of arguments supplied with the command falls outside the specified range, an error message will be generated automatically.

Note here that only one function name *star_cmnd* is provided for the star commands, rather than having a separate function for each command. Instead the function *star_cmnd()* will be passed an index to indicate which of the commands was called. If it is the first in the table, *zero* will be passed to it, *one* if it is the second, and so on.

To keep things simple, we have restricted our module to a response to two star commands, and have ignored other features such as responses to SWIs and interrupt handlers, but these can all be set up in the CMHG source file if required. For such cases the following additional keywords are provided, and these are covered in Acorn's example module supplied with the DDE suite:

```
initialisation-code:
module-is-runnable:
swi-chunk-base-number:
swi-handler-code:
service-call-handler:
```

THE C SOURCE

The source code for the module appears in figure 2. As you can see, it is simple in the

extreme. It contains only one function, the name of which corresponds to that given with the keyword:

```
command-keyword-table
```

This function takes four parameters. The first:

```
char *arg_s
```

is the argument string supplied with the command when it was issued. Thus for example, if a user typed the following at the star prompt:

```
to_hex 999
```

`arg_s` would contain the string "999".

The second parameter `int arg_c` is the number of arguments contained in this string (assuming space separators). It would be *one* in the above example.

The third parameter `int comnd_no` is the index which tells us which of the commands in the table the user entered. The last parameter is the module's private word pointer. This will contain the address of the workspace allocated to the module.

As you can see, we have set up an *enum* to clarify the simple *switch* statement used to distinguish between our two star commands. The first simply prints the hex equivalent of the argument passed to it, while the second generates an error. It does this by returning a pointer to a `_kernel_oserror` structure, defined statically earlier in the source. This structure contains an error number and error message string.

COMPILATION

There are three stages to the creation of the module: running CMHG to generate the header, compiling the source, and linking the object files; though this can all be performed in a single step, as if by magic, by using an appropriate Make file.

Using CMHG is simplicity itself. Either drag your description file to the CMHG dialogue box, or type something like:

```
CMHG <description file> [obj file]
```

where *obj file* is the (optional) name of the destination object file.

When compiling your source, you will need to set two flags (either from the dialogue box or from the command line): you must use the *-c compile only* flag, and the *-zM module* code flag. The latter is essential, since this tells the compiler to maintain separate code and static data areas, and enables the module to be multiply instantiated. Note here that *all* code linked into the final module must have been compiled with the *-zM* flag set.

Linking is also straightforward. If you are performing it from the command line, you will need something like the following:

```
Link -m -o TestMod o.ModuleHdr  
o.cmodule C:o.Stubs
```

where *TestMod* is the target filename, *ModuleHdr* is the name of the object file generated by CMHG, and *cmodule* is the C object code generated by CC. Note the use of *stubs* to tie the module into CLib, and the vital *-m* flag which tells the linker to generate relocatable module code. When the job is finished you should have a working module of around 6K in length - though much of this bulk is a one-off overhead.

By following these simple outlines you should be able to create modules containing any number of star commands with relative ease, and by referring to the DDE manuals, to enlarge their scope to encompass SWIs and event handlers. Next month we will look at the problems of coaxing a C-generated module to behave like a Wimp application.

RU

ARE YOU GOOD ENOUGH?

As the leaders in software for the Archimedes range of computers, CLARES MICRO SUPPLIES are looking to extend our range even further. We are looking for people who are as excited by the Archimedes as we are.

If you have written any programs, completed or not, then we would like to hear from you.

If you have any ideas for programs and have the ability to execute the ideas then we want to hear from you.

If you have the ability to program the Archimedes but not the ideas to program then we want to hear from you.

Programs can be written in any language as long as they perform their stated task. Many of our programs contain large chunks of BASIC with ARM code in the areas that it is needed. BASIC on the Archimedes is a very powerful language and we do not attach any snob value to its use. If your program does what is meant to do then that's all we are interested in. Why not join the top team on the Archimedes. You get the support of our in-house team, privileged access through us to Acorn and invitations to our informal programmers seminars.

The most important point is that you will be earning top royalty rates of if you prefer we will purchase your program outright.

Please write, in confidence, to Mr. D. Clare at:

**Clares Micro Supplies,
98 Middlewich Road,
Northwich,
CHESHIRE CW9 7DA**

If you have a program either complete or in development then please enclose a copy for our evaluation.

To protect yourself we advise that you lodge a copy of the program with your bank or solicitor BEFORE you send us a copy. You can then prove that your program pre-dates anything that we have.

Act today and become part of the leading software team producing software for the world's fastest micro.

C Notebook

Hints and Queries

Compiled and Linked by Lee Calcraft

MISSING ERROR FLAG

by Dave Appleby

In both ANSI C 3 and 4, the "no error" flag used for error windows is missing from the *wimp.h* header. It can be added to the *wimp_errflags* enum in *wimp.h* as:

```
wimp_ENOERROR=16
```

or #defined as required, enabling *wimp_reporterror()* to be used as an information window as well as for error reporting.

MYSTERIOUS DISAPPEARANCES

by David Pilling

Sometimes application programs will vanish, with no stack backtrace or error box. One cause of this is the C file library.

If your application's WimpSlot is only just big enough, then it seems that opening files causes the C library to run out of space. The problems only show up when files are closed. At this point the C library prints (in text mode) that it has run out of memory, and kills the task stone dead. So the tip is, if you suffer from disappearing programs, press F12, and open a spool file (*spool trace), then go through the steps that cause the trouble. Close the spool file (with *spool), and load it into Edit and look for any hidden messages from the C library (usually bracketed with a couple of **s). The spool file will trap all VDU output, and thus the helpful messages which were printed somewhere off screen.

POINTER TROUBLE

by Lee Calcraft

The information given about RISC_OSLib functions in the ANSI C manuals is excessively concise, and can lead to slip-ups on the user's part. For example, you need to take care when a function requires a pointer to an empty structure, into which it will put a result. Thus with:

```
wimp_get_caret_pos(wimp_caretstr *)
```

it is no good simply defining a suitable (*wimp_caretstr* *) pointer, and passing this - your program would soon crash. You must define

a *wimp_caretstr* structure, and then pass the pointer to this to the function.

As a guide, if RISC_OSLib is going to provide memory for a particular structure, the function concerned usually returns the structure, as with *dbox_new()* for example, which returns a *dbox*.

IMPROVED TRACE MACROS

by Chris Wilmott

The following macros provide a better trace facility than that offered in ANSI C. They display formatted debugging output at a particular screen line on the Desktop.

To use the feature, include the macros at the start of a source, or in a header, then use #define TRACE 1. Otherwise #define TRACE 0, in which case no trace code is compiled.

As an example, the following:

```
show3(8, "Mouse x=%d y=%d ", \
      d->m.x, d->m.y);
```

might be used to display the mouse co-ordinates on line 8 of the screen. Use *show1()* if you have one parameter to pass to *printf()*, *show2()* if you have two or *show3()* if you have 3.

```
#include "bbc.h"
#include <stdio.h>

#if TRACE
#define tron(a) bbc_vdu(4); bbc_vdu(26);\
                bbc_vduq(31,0,a)
#define troff(void) bbc_vdu(5)
#define show1(a,b) {tron(a); printf(b);\
                    troff();}
#define show2(a,b,c) {tron(a);\
                    printf(b,c); troff();}
#define show3(a,b,c,d) {tron(a);\
                    printf(b,c,d); troff();}
#else
#define show1(a,b)
#define show2(a,b,c)
#define show3(a,b,c,d)
#endif
```

Please send us your C hints - all published hints will be paid for.

RU

Write-Back... Write-Back...

Re-Inking Ribbons - WD40



With regard to the recommendation by Mr. R.S. Molton (in *Write-Back RISC*

User 5:8) to use WD40 to extend the life of ribbons, this is about all that it will extend since the major constituent of WD40 is white spirit (60% or more by volume). The effect upon the printhead needles in the long run will be deleterious, and this will undoubtedly cost more than is saved. There are good quality ribbon refreshers on the market, but I would reinforce the point that ribbon wear will take place, and that re-inking is only a means of extending life for a finite period. I would not expect a ribbon to withstand more than five rejuvenations before requiring replacement.

S.J. Haselton

Is Virus Protection a Racket?



I would like to express my concern over the fact that Acorn appears to be allowing Pineapple to make profits from the Virus market. As readers will know, the Virus protection software !Killer has been given to Pineapple to develop and administer. They in turn are charging £25 to each user to cover development and administration. I feel that this is fine, but schools are being asked

for £100 for a site licence. Only one disc, and one load of administration, so why £100?

Bob Harding

We passed a copy of Bob Harding's letter on to Jim Daniels at Pineapple, and here are some extracts from his reply:



As far as "making profits from the virus market" is concerned, we are not sure

ourselves whether at the end of the first year the scheme will show a profit or a loss. If it does show a profit then we will reduce prices for the second year; if it shows a loss then we will inevitably have to increase them.

Within a couple of weeks from starting the scheme we had calls from schools saying how pleased they were that a concerted effort was being made against virus writers, and it was these first few schools who suggested that we should enhance the chance of success by making an additional charge where the software would be used on more than one computer (as in schools). The £100 charge covers any number of machines over 10.

There is a fundamental principle involved here about whether or not a purchaser of software should be able to use this on just one computer or on as many as he/she chooses. Most people, I think, agree that if an individual purchaser uses a piece of software

at say home and work there is no problem, but when many individuals may be using the same software on different machines at the same time then a licence fee is justified.

I would also add that much of the development work that has gone into this software is to prevent the spread of viruses on school computer networks.

Jim Daniels, Pineapple Software

Most software (on all computers) is sold on the basis that the purchaser has paid for a licence to use the software on a single machine. Pricing takes this into account, and so a site licence for multiple machine usage is an accepted compromise over this principle between the interests of the user(s) and those of the supplier.

Object-Oriented Programming



I was interested in the correspondence in *RISC User 5:8* regarding object-oriented languages. Of course, there is always LISP, or better still Scheme. Mind you I am somewhat biased - but try *BYTE* magazine, February 1988. If anyone would like details of our EdScheme interpreter for the Archimedes then please contact me. We would be happy to supply bibliographies on Scheme, examples of object-oriented code

Write-Back... Write-Back...

using Scheme, and evaluation copies of our software and text.

Ray Burcham, Lambda Publications, 194 Cheney Manor Road, The Green, Swindon, Wilts SN2 2NZ.

Is C Faster than Basic (Again)



You unfortunately made a typographical mistake in my reply to Mr Banks (in RISC User 5:8): the term "...case operator..." should read "...cast operator...". As in programming this rather changes the semantics of what I was trying to say.

Kate Crennell is, of course, correct to point out that these timings can be altered by different environments. My timing comparisons were all done in mode 12 on an ancient A440 using the most suitable compiler options. Running in other modes seems to give the same overall result that C is faster than Basic. Fortran is probably slow because of the need (like Pascal) to use the floating point emulator. For simple arithmetic operations C seems not to need this. Writing programs to use mathematical functions like sin, log, etc. causes all the compiled languages to use FPEmulator, with a consequent slow down in timings.

Perhaps we need suggestions for a comprehensive set of problems

(similar to the Byte/PCW and Drystone benchmarks) to compare languages on any given Arc.

P.S. Williams

More from Arc Newcomers



Having upgraded from a BBC micro (issue 4) directly to an A5000

Learning Curve, for much the same reason as Margaret Penfold in your June issue (RISC User 5:7), I must agree with her about the noisy fan. Like her I liked the boot file system, but because both myself and my wife use the machine, I really would have liked the ability to boot either from a floppy disc, or from the hard disc, so that the system is immediately configured for whichever of us is using it. Does anyone know how to do this?

I think I have also experienced the same problem that Sean O'Connell reported in the July issue (RISC User 5:8). Using the Cartesian graph plotting program on the June magazine disc I kept crashing the machine when I pressed Return after entering the full file name, or when selecting the 'OK' button on the screen. It turned out that I had inadvertently been typing a lowercase 'x' instead of the uppercase 'X', but I am concerned that such a fairly simple mistake should have such a serious effect.

Laurence Cox

Case can be confusing, because there are circumstances where it is of no consequence at all, and others in which it is vital to get it right. Normally, when specifying a file name, RISC OS makes no distinction between upper and lower case, but it is impossible to comment in detail on Mr Cox's case without more information. Applications should try to ensure that they at least respond sensibly to unrecognisable input, and not just hang the machine.

To the Authors of the Wimp Programmers' Toolkit

I am an old retired blimp
I cannot comprehend the Wimp.
The toolkit I did really hope
would let me somehow, somehow cope
and use the !Easywimp to crib
then add my program just ad lib.
With !serial as a model code
I'd integrate my program's mode.
But nay, 'tis not to be once more,
for !serial has a heavy core
of complex matter one must view
line Serial Ten pence one or "TO".
And so I cannot separate
the parts that are the serial state
from those essential Wimpy bits;
it's quite beyond my ageing wits.
So please, oh please until your book
is here and in it I can look,
I wish you'd add a kit of tools
for such as me, who are the fools,
a windows program: options three -
a click on one will print, maybe,
the number three, or two, or one.
That's all that need be done.
Then to the variable I can assign
GOTOs among the lines of mine.

Robert Newmark

Write-Back... Write-Back...

No doubt Mr Newmark, and many other readers, will be pleased to know that the book, **Wimp Programming for All** is due for publication in October, in time we hope for the Acorn User Show. Based partly on the series of articles by Lee Calcraft entitled *Mastering the Wimp* published in volume 3 of RISC User, this book should enable all programmers to write Wimp programs on the Archimedes.

A Plea to Acorn



Why does Acorn not complete hardware it has already promised

instead of devoting its efforts to new projects of dubious commercial value like the recently announced A4 laptop? We were promised a hardware floating point chip for the A540 during 1991: 1992 is more than half over and yet we have no delivery dates for this chip which would make the A540 much more useful for technical calculations, and help Acorn win back some of the tertiary education market it has lost to the PC and the Apple Mac.

There are also rumours of Acorn providing access to 24-bit colour. But why don't they give us true 8-bit colour first, with the

ability to get any colour using RGB values, instead of this messy operation using the TINT qualifier or ColourTrans? Few schools can afford even a cheap colour printer, so how many customers in Acorn's important education market will be buying colour printers which can do justice to true 24-bit colour?

Kate Crennell

The latest 'rumour' on the floating point chip is that it is scheduled for release this autumn.

RU

• POINTS ARISING • POINTS ARISING • POINTS ARISING •

Review of Dictionary of the Living World (Volume 5 Issue 9)

On page 34 it was stated that there are 1007 entries in the database. This is incorrect - in fact there are around 2600 entries. Apologies to all concerned.

MouseTrap

(Volume 5 Issue 8)

The MouseTrap application can cause problems if the MegaMouse module (Volume 4 Issue 1) is also being used. To cure the problem, alter MouseTrap's *!RunImage* file by adding the following lines (some of which overwrite lines in the original):

```
710 CASE Num% OF
712 WHEN 0: PROCAllOver
714 WHEN &400C1: Confined%=FALSE :PROC
Confine: PROCSetIcons
716 ENDCASE
990 DEF PROCConfine
```

```
995 LOCAL x%,y%,z%,xlim%,ylim%,xEig%,y
Eig%
1000 MOUSE x%,y%,z%
1005 SYS "OS_ReadModeVariable",-1,4 TO
,,xEig%
1010 SYS "OS_ReadModeVariable",-1,5 TO
,,yEig%
1015 SYS "OS_ReadModeVariable",-1,11 T
O ,,xlim%
1020 SYS "OS_ReadModeVariable",-1,12 T
O ,,ylim%
1025 IF Confined% THEN
1030 IF Vertical% THEN MOUSE RECTANGLE
x%,0,0,(ylim%+1)*2*yEig%-1
1035 IF NOT Vertical% THEN MOUSE RECTA
NGLE 0,y%,(xlim%+1)*2*xEig%-1,0
1040 ELSE
1045 MOUSE RECTANGLE 0,0,(xlim%+1)*2*x
Eig%-1,(ylim%+1)*2*yEig%-1
1050 ENDF
1060 ENDP
```

RU

Hints & Tips. . . Hints & Tips

Don't forget to keep sending in your hints on anything relevant to the Archimedes range - and remember, we pay for all hints we publish.

DISPLAYING A VARIABLE WITH THE HOURLASS

Rolf Herschel

While testing a program, a very simple method of dynamically displaying the value of a variable which will not exceed 99 is to use the hourglass percentage facility. This avoids any need to open command windows or print directly on the Desktop, and does not interfere with multi-tasking. You will need to turn the hourglass on at the start of the program with:

```
SYS "Hourglass_On"
```

and then use:

```
SYS "Hourglass_Percentage",var%
```

to display the value of var% at any point in the program. Finally, use:

```
SYS "Hourglass_Off"
```

to turn off the hourglass when you have finished with it.

HOW THE FILER KNOWS IT HAS SEEN AN APPLICATION

Johann Briffa

After some experimentation, I've discovered how the Filer recognises applications - by the existence of a sprite in the Wimp sprite pool with the same name as the application. This means that an application's !Boot file will only be run if there is no sprite with the application's name in the Wimp sprite pool. Thus, if you don't want to run an application's !Boot file (perhaps to avoid loading a virus, or to avoid a password protection program being executed), simply create a sprite in Paint with the same name as the application, save this sprite file somewhere accessible, press F12 and type:

```
*IconSprites <filename>
```

where <filename> is the name of the sprite file you have created. Now 'seeing' the application will not run its Boot file. Note that on RISC OS 3, simply holding down Ctrl while opening a directory will prevent any applications in that directory from having their !Boot files run.

BOOTING WORDWISE PLUS

D.A.Symes

In the days of the old BBC B, it was possible to build an executable file that would

automatically start up WordWise Plus, select a segment and load in a WW+ program, which could be written as follows:

```
*W.  
:SELECT SEGMENT 5  
:LOAD TEXT *WPulldown"  
:SELECT TEXT  
etc.
```

Unfortunately, on the Archimedes, because of the way the Desktop works and the fact that WW+ takes over the machine completely, this sort of file will not execute correctly if created as an Obey file. It executes the application WW+ correctly, but does not progress any further until WW+ is quit, and then it requests 'Please insert Disk SELECT. The solution is straightforward and obvious once seen: create the !Run file as a Command file, rather than an Obey file. This makes a lot of sense, as each line of an Obey file is sent directly to the operating system, rather than a Command script which simulates typing the file in.

BASIC PROGRAMMING WITH RISC OS 3 EDIT

Keith Powell

I have prepared many Basic programs with RISC OS 3 Edit and have found it a delight to use. However, I was confounded at first because Basic reports errors by line number, which Edit does not display if you have chosen to strip them off. This means that if you are editing a Basic program which gives an error when run, you have to reload the program into Edit without stripping line numbers, which is quite inconvenient. A solution to this problem is to set the *Line number increment* to 1 (obtained via the BASIC options submenu in Edit's icon bar menu), and then you can go to any line number reported by the Basic error handler simply by pressing F5 to open the Goto dialogue box and entering the offending line number.

ALTERING ICON TEXT IN ASSEMBLER

Alan Wrigley

If you are altering the text of an indirected icon in assembler, don't be tempted to use STR to speed up the process by writing 4 bytes at a time. For example, at first sight the following piece of code looks adequate:

```
.....  
SWI *Wimp_GetIconState"
```

Hints & Tips. . . Hints & Tips

```
LDR R2,[R1,#28]
LDR R0,string
STR R0,[R2]
.....
.....
.string EQU$ "Off":EQU$ 13
```

which you might think would take the string "Off" and put it into the icon's indirected text buffer. However, the start of the buffer may not necessarily lie on a word boundary, in which case the result of using STR is undefined (but in practice it stores the four bytes on a word boundary by ignoring the bottom two bits of the address). This means that you must always use the long route to transfer the text byte by byte:

```
.....
SWI "Wimp_GetIconState"
LDR R2,[R1,#28]
ADR R3,string
.loop
LDRB R0,[R3],#1
STRB R0,[R2],#1
CMP R0,#32
BGE loop
.....
.....
.string EQU$ "Off":EQU$ 13
```

Errors caused by the first method can take hours to track down unless you have a good debugging utility such as RISC User's Spyglass. Furthermore, it's unpredictable, since the buffer might lie on a word boundary or it might not.

ROUNABOUTS ON YOUR STREET

MAPS

A.Hope

An undocumented feature of Kell Gatherer's excellent StreetMap processor is the ability to produce very realistic looking roundabouts on your maps. The way to do it is just to draw a small circle over the relevant junctions on your original Draw skeleton map and the map processor will convert them into roundabouts for you.

SPRITE ICONS IN FormEd

Rolf Herschel

If you are using FormEd to create indirected sprite-only icons, you might imagine that FormEd would place a default value of 1 (for

the Wimp sprite pool) into the icon's sprite area pointer at iconblock+24. In fact, it leaves the pointer undefined (a value of -1 to be precise). Since the icon's sprite area pointer overrides the window sprite area pointer (at windowblock+64), this means that any sprite you use, from whichever sprite area, will not be visible in the icon unless you reset the pointer before creating the icon. To do this, all you need is the following line between loading the template and creating the window:

```
block%!(88+icon%*32+24)=spritearea%
```

where block% is the parameter block you are using to load the template and create the window, icon% is the icon handle within the window, and spritearea% is the sprite area (i.e. the address of a user area, or 1 for the Wimp pool).

TRAPPING ERRORS IN LIBRARY PROGRAMS

John Laidler

A problem with the way Basic V reports errors can be seen when an error occurs in a library program. Readers who try typing in listings from the Wimp Function/Procedure Library will have difficulty tracking down the error because the error messages will simply refer to the last line of the program that invokes the library program. This is a consequence of how the ERL variable works; a way to avoid this is to test the library program not in isolation, but as part of the application program. The simplest way to do this is to remove the LIBRARY command in the main program and simply append the library program to the end of the main program. Error messages will then refer to the correct line of the program. Once fully tested the library can be removed from the main program and saved separately.

An alternative approach for assembler libraries is described in the 3D Graphics article in this issue, which uses the assembler library method described in Managing Assembler last month.

SPEEDING UP DISC BACKUPS

Keith Powell

If you are backing up a disc on a single drive, you may well find that you have to swap the discs after about three-quarters of the backup procedure. The remedy to this problem is to

Hints & Tips. . . Hints & Tips

increase the Next memory slot in the Task Manager to 800K (or 1.6Mb if you are backing up a high density floppy on an A5000 or A4), and then the backup will be done with only one disc swap. To accomplish this, click Menu over the Task manager and choose *Task Display* (in RISC OS 2), or simply click on the Task Manager (in RISC OS 3). Then drag the Next bar to the correct setting. Of course, you can always use the quick flag from the command line, e.g. *Backup 00 Q.

SPACED FILENAMES

Ivor Clarke

You can put spaces into filenames in save boxes if you make sure you use a *hard space* character (ASCII 160). This can be entered by holding down Alt and pressing the Space bar.

RISC OS 2.01 HAS ADDED FEATURES

Johann Briffa

Here are a few points worth noting about RISC OS 2.01, as supplied on the A540. It contains everything that RISC OS 2.00 does and, as documented by Acorn, the ARM3 support and SCSI Filer modules. However, it also contains the filetype definitions for *Desktop* files (type &FEA) which, when executed, have the alias function *Desktop -file %*0, and *Config* files (type &FF2) which have no execution alias. The use of Desktop files has been extended in RISC OS 3, but basically it has the advantage of not leaving any files open when used in an auto-boot application, as a !Run file does not have to contain the *Desktop command. This is also of interest to RISC OS 2.00 users; to prevent files being left open in your boot sequence, set up system variables using the following:

```
*Set Alias$@RunType_FEA Desktop -file %*0
*Set File$Type_FEA Desktop
```

USING A JUMP TABLE

Alan Wrigley

When you need to perform one of a set of actions depending on the value in a register (for example, poll reason codes, icon clicks etc.), the most obvious way is to use a series of CMP..BEQ instructions, for example:

```
CMP R0,#0:BEQ null
CMP R0,#1:BEQ redraw
```

CMP R0,#2:BEQ openwindow

However, a more efficient way is to use a jump table. This is done by arranging a series of branches in ascending order of value. Only one CMP instruction is needed, and the program counter is incremented by the required amount to point to the appropriate branch. The above example would then look like this:

```
CMP R0,#(tableend-table)/4
ADDCC PC,PC,R0,LSL#2
B outofrange
.table
B null
B redraw
B openwindow
.tableend
.outofrange
REM deal with out of range values here
```

This approach will usually use less code, and the execution time will be faster for register values down the list. Note, however, that the method assumes the first branch is taken when R0=0, and subsequent branches relate to consecutive values of R0. Note also that there must be just one instruction between ADDCC and the start of the table, as here.

RU

£ !Shares

NEW FLOPPY VERSION!

Download and store share prices from Ceefax. Daily share prices from Jan 1990 (with room for 4 yrs) of shares on BBC2 ie top 333 by capitalisation. Min. memory of 2Mb OR double floppy needed. See graphs of the shares with averages and compared with the Footsie 100 index. Analyse shares by P/E ratios, yields, cover, percentage movements etc. Hard disc version has 480+ sets of prices from Ceefax and Oracle back to Sep 1986. All versions works with Morley or Ground Control Teletext adaptors.

Send a cheque for
Floppy Version £30 or Hard Disc version £38 to
J.V.Parker, 30 Piper Road, Ovingham,
Northumberland, NE42 6AY.
or ring 0661 834464 for more details.
State clearly 2Mb, 2 floppy or Hard disc.

Choosing the Right Monitor

David Spencer looks at the various monitor types available for the Archimedes.

When the Archimedes was first launched, life was simple: you either had the standard Acorn colour monitor, or its black and white cousin. However, things have changed in the five years since then, and purchasers now have a wide range of monitors to choose from, be they first time buyers or existing users looking to upgrade. In this article we won't be comparing particular brands or models, but we will survey the different type of monitors, and indicate their strengths and weaknesses.

SCANNING AROUND

In order to understand how particular types of monitors differ, we need to look at how the computer produces its picture. As most people are aware, the screen display is made up of a rectangular array of dots called pixels, each of which can be one of several different colours. The computer displays these by sending them to the monitor one-by-one, starting at the top left and scanning across the first line, and then moving back for the second line and so on. The whole picture is sent in a fraction of a second, and then repeated continuously so that the eye sees what looks like a solid picture. Figure 1 shows this scanning process with the solid lines indicating the build-up of the display, and the dotted line the fly-back during which the scan returns almost instantaneously to the other side of the screen.

The exact rate at which pixels are output to the monitor depends on the particular screen mode and monitor type, but it must remain unchanged between each scan of the entire picture, or frame, in order to avoid a jumpy or flickery picture. Furthermore, the monitor needs to be synchronised to the scanning of the picture otherwise it will have no way of knowing where a particular pixel fits on the screen. To achieve this, the computer outputs two synchronising pulses (or sync pulses) along with the picture itself.

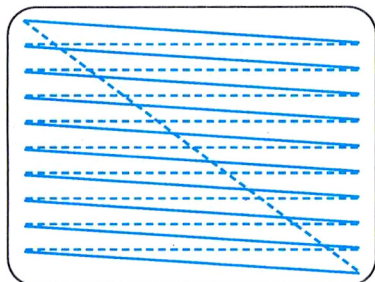
The first of these is called the *line sync pulse* and is output at the end of each line to tell the monitor to return to the left hand side. The second pulse is the *frame sync pulse* and is sent at the end of the complete frame to return the monitor's scanning to the top of the screen again.

The rates at which the line and frame sync pulses occur are called the line rate and frame rate respectively, and the rate at which the actual pixels are output is called the dot rate. The choice of the scan rates, which as we shall see below is far from arbitrary for most monitors, has a major impact on the available screen resolutions. For example, if you have a dot rate of 6MHz, a line rate of 15 kHz and a frame rate of 50Hz, the total number of dots that can be fitted on one line is $6000000/15000 = 400$, and the total number of lines is $15000/50 = 300$. In practice some of the dots are needed for the sync pulses themselves, reducing the maximum resolution available with these scan rates to about 300 by 240 pixels.

BACK TO MONITORS

Having covered some theory, we can now look at the different monitor types. The original Archimedes monitors, and currently still the most widespread, are the TV-standard monitors. These monitors, which include the Acorn badged AKF17 at £199 as supplied with the Archimedes (but not the A5000) get their name from the fact that the scan rates they use are the same as that for broadcast television, namely a line rate of 15.625kHz, and a frame rate of 50Hz. The reason that these monitors were chosen in the early days was that they were much cheaper than any other options because their design was very similar to that of a television, which of course are made by the million. It was also a logical progression from the earlier Acorn computers that had to generate TV standard output because they used TVs as their monitors.

Choosing the Right Monitor



Scanning pattern of monitor display

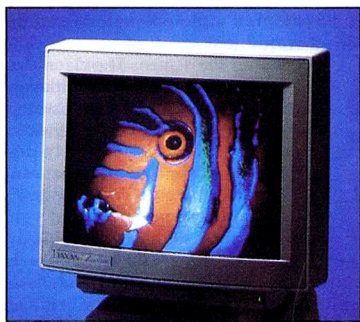
The main drawback of TV standard monitors is that the scan rates restrict the maximum resolution available. The best that RISC OS can provide without distorting the image is 640 by 256 pixels, and to achieve this it has to use pixels that are twice as high than they are wide, rather than being square. The chief advantage on the other hand is that TV standard monitors were the original standard, and are hence supported by all software. However the restricted resolution and non-square pixels gives fairly poor display quality, particular with anti-aliased fonts.

JOIN THE PC WORLD

The world of IBM PC compatibles gave up on TV standard monitors a long time ago and eventually settled on the VGA standard that offers a maximum resolution of 640 by 480. Not only has this got the advantage over TV standard monitors of square pixels, but the ratio 640 to 480 is 4 to 3, which just happens to be the same as the width to height ratio of the screen in most monitors. This means that the picture looks the correct shape, without any need to distort it at all. Another advantage of VGA monitors is that they use a slightly higher frame rate, which gives noticeably less flicker than a TV standard monitor.

Unfortunately, there were problems using standard VGA monitors on earlier Archimedes - the main one being that to

achieve the scan rates needed by VGA, a dot rate of 25.175MHz is needed. The nearest the Arc could offer was 24MHz, which was a little too far away for the average monitor to produce a stable picture. The other problem is that the two sync signals mentioned earlier need to be inverted and separate for VGA, and combined for TV standard monitors. Providing separate signals can be achieved by configuring RISC OS, but inverting the signals required links inside the machine to be changed.



Taxan 795 multisync colour monitor

Acorn addressed these problems on the 540 by providing the 25.175MHz dot clock, and allowing the sync pulses to be inverted in software. The new generation of computers, starting with the A5000, goes even further by providing a standard 15-pin VGA socket, rather than the 9-pin socket of earlier computers, and detects the monitor type automatically from the cable wiring.

The big advantage of buying a VGA monitor is cost. They are already on a par price-wise with TV standard monitors despite their superiority, and prices are falling continuously. There are, however, as always, some disadvantages. Firstly, as already mentioned you really need an A540 or one of the new generation computers to get a reliable picture quality. Secondly, you exclude the use of the TV standard screen modes such as modes 12 and 15. This may be

a problem for some programs, particularly games, which expect to run in these modes. RISC OS 3 attempts to get around this problem by emulating the lower resolution modes, but it can only do this by reducing the picture size so that you get a squashed up picture across the middle of the screen.

THE BEST OF ALL

Both classes of monitors that we have looked on so far have one thing in common - they can only support a single line and frame rate combination. Any attempt to display a picture with the wrong rates would just result in an un-synchronised mess on the screen. The class of monitors called the multisyncs (or multiscans) on the other hand can work with a wide range of both line and frame rates, rather than fixed rates. It is therefore perfectly possible to have a multisync monitor that can display TV standard modes, VGA modes, and any other in-between modes that you care to devise. RISC OS provides multi-sync only screen modes of 640 by 512 pixels. These offer square pixels at a resolution somewhat greater than standard VGA. It is a multisync monitor that is supplied as standard with the A5000.

Many manufacturers make multisync monitors of varying quality, though the two that crop up most often in the Archimedes world are Taxan and Eizo. Taxan offer the 14" 770+, 775 and 795 (each one an improvement on the previous model), the 16" 875 and the 20" 970, among others. Eizo's main models are the 14" 9060, and the better quality 9070. The prices range from about £380 for the 770+ and 775 up to around a £1000 for the larger screen models.

While multisyncs are often the answer to all your monitor problems, there are a couple of points to watch out for. The first and most serious is that increasingly, the minimum line scan rate supported by multisyncs is not low enough for TV standard modes. This is a problem with both the Taxan 795 and the Eizo 9070. If this

is the case, the only possible solution is to add a VIDC Enhancer to your computer. This is a little hardware add-on that allows the dot rate, and hence the line and frame rate, to be increased by 50%. This is usually enough to take the line scan rate into the range supported by the monitor. This solution is not necessary on the A540 and newer machines, as they effectively have a VIDC Enhancer built in.

The second problem is one of adjustment. To achieve a well proportioned picture that fills the screen at all scan rates is very hard, and earlier multisyncs, notably the Taxan 770+ and 775, left this job up to the user by providing a vast array of preset controls and knobs that are a nightmare to adjust. I'm sure that there are many 770+ owners that still haven't got their monitor set up quite right! Thankfully the more modern monitors such as the Taxan 795 can automatically adjust themselves to give the best possible picture. Some multi-syncs, for example the one supplied by Acorn with the A5000, compromise in that they will adjust automatically to display a VGA picture, but leave it up to the user for other screen modes.

LOOKING GOOD

So far we have looked only at the resolutions at which various monitors can technically display a picture, while totally ignoring the quality that you can expect.

As you can probably imagine, quality can vary greatly between model and manufacturer, but there are a couple of pointers that you can glean from the spec sheets. The first of these is the dot pitch or mask pitch, which is a measure of the distance between the individual dots that make up the display tube. It doesn't matter how high a resolution you try to display, two adjacent dots will only appear to be separate if they are at least the mask pitch distance away from each other on the screen. Otherwise, the dots will merge into one. For a 14" monitor, a maximum value

Choosing the Right Monitor

for the dot pitch to give a good crisp display is about 0.32mm, and a value of 0.28mm or even 0.26mm is preferable. As the screen size increases, the dot pitch becomes less important, but still the smaller the better.

The other pointer to quality is the quoted video bandwidth which will be a figure in MHz. This is a measure of the ability of the monitor's circuitry to handle high frequency signals, and should be at least as high as the dot rate (25.175MHz for VGA, and as high as 36MHz if a VIDC Enhancer is used). A bandwidth that is too low will result in effects such as fuzzy edges. Generally speaking, the higher the bandwidth the better.

There is also a trend in monitors towards the use of 'black' tubes giving a higher contrast, and Sony Trinitron type tubes that only curve in one direction. Both these

features add to the cost, but should be considered if you want the best in picture quality. You should also look at other factors such as the physical appearance of the monitor. After all, you will be staring at it for hours on end.

TAKING THE PLUNGE

When it comes to buying a monitor it is a false economy to try and skimp and save a few pounds by choosing a lower quality model. Ideally a multisync monitor is the best option, but failing that a VGA unit should be preferred to a TV standard monitor. Above all though, before buying make sure you visit your local dealer and see for yourself the quality and features. If possible, try out the various options by doing some real work on them, such as preparing a DTP document, rather than looking at the quality of a static picture for a few seconds.

RU

PenDown Plus (continued from page 35)

entered into them, and can then be saved in one or more of four different formats - most often, perhaps, to export onto a PenDown Plus page as a Draw file.

DOCUMENTATION

There are two manuals to go with PenDown Plus. The well indexed and laid out User Guide covers facilities in a straightforward way by explaining each of the three areas of control outlined above (icon-strip toolbox, menus and configuration). There is no tutorial, but there is an ample introduction to the conventions used throughout, and an indication of keyboard equivalents (e.g. Ctrl-S for Save), which menus on screen do not always display.

The separate MailMerge and Table Editor manual is equally easy to use though it carries no index. Since the operations dealt with here are necessarily more complex, and indeed will be new to some users, it is as well that an approach is adopted that takes you by the hand and leads you closely through the steps and stages necessary to create tables and insert data into documents.

CONCLUSIONS

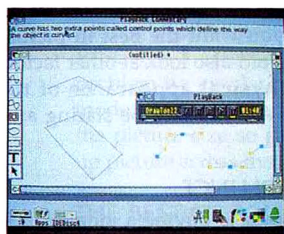
PenDown Plus will make an ideal word and text-with-graphics processor for the regular as well as first-time user. There is very little that cannot be done with PenDown Plus, and the drawbacks already mentioned are but a small price to pay for what is in most respects an application packed with just the right features and yet at the same time extremely easy to learn.

Despite its relatively low price (compared to the likes of Pipedream 4 and Impression), PenDown Plus does not in the least feel a cut-down package. It is a fully integrated product which does what is asked of it extremely well. PenDown Plus is definitely recommended.

Product Supplier	PenDown Plus Longman Logotron 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS. Tel. (0223) 425558 £79 ex. VAT (single user) £400 ex. VAT (site licence)
Price	

RU

NEW



PlayBack

Real-time mouse recorder

PlayBack allows recording in real-time of all mouse and keyboard operations as they are carried out. This new package will produce intriguing and eye-catching displays that will be of interest to home, education and business users as well as for training. It is an ideal tool for creating demonstrations of programs which run in the desktop.

During a computer session, all mouse operations and key presses may be recorded and saved to file. On playback everything will happen in exactly the same way, with the mouse pointer following all of the recorded movements and button clicks, and

text appearing on the screen as if typed from the keyboard. Playing back a recording is exactly like carrying out the session again!

- Synchronised text commentary may be added to recordings
- Recordings may be converted to ASCII format for editing and fine-tuning
- Play-only version which may be freely distributed with recordings
- Recordings may be up to 1 hour long
- REPEAT operation for continuous demonstrations
- Works with all RISC OS compliant desktop software
- Supplied with example recordings

Members price
£18.98

Hearsay II

The most advanced communications package for Archimedes systems.

Hearsay II is a multi-tasking and fully RISC OS compliant communications package designed for easy communications for the first-time user, but with a wide range of advanced features making it the professionals choice.

It is ideal for use with Prestel, Telecom Gold, Campus 2000 and Compuserve, and also provides very high quality VT320, VT102, VT52 and Tektronix 4105 Colour terminal emulations for direct connection to mini

and mainframe hosts. In addition it gives access to Minitel systems such as the Teletel service and provides Xmodem, Ymodem, Zmodem and Kermit file transfer, a comprehensive script language and an auto-dial number directory.

- Fully RISC OS compliant
- Multi-tasking and background transfers
- Scalable terminal windows
- Xmodem, Ymodem, Zmodem, Kermit, SEALink, and ASCII file transfer
- Batch file transfer
- Script language based on a subset of C
- Macro processor and definable keyboard
- Support for RISC OS printer drivers
- Number directory with auto-logon
- MNP 2 and Vasscom error correction
- Supports most popular modems e.g. Hayes
- Online GIF file viewer

Upgrade to version II

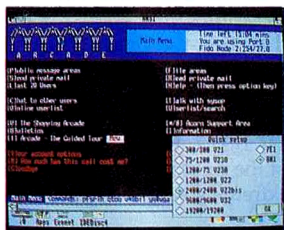
Upgrade from Hearsay I for only £41.13 plus £3.10 carriage. Please return original disc to address below.

'It does everything we want, and is a pleasure to use.'

ARCHIVE Jan 92
'Background data transfer, a well documented script language and high RISCOSity make this a powerful contender...'

ARCHIMEDES WORLD April 92
'...the manual is an excellent example of thoroughness and clarity...Hearsay II is a very good communications package and is thoroughly recommended...'

ACORN USER May 92



Hard Disc Companion II

Hard disc backup and retrieval

Version II of Hard Disc Companion offers superior performance and efficiency. It has been completely re-written and is now twice as fast and even easier to use.

It provides a structured approach to the backing up of hard drives, and the recovery

of files in the event of disc failure or accidental file deletion. Both Full and Incremental backups are supported, and the files to be backed up or ignored may be specified using simple drag operations.

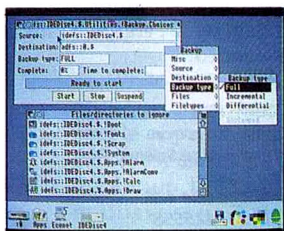
Members price
£44.94

The entire backup specification may be saved in a script file for use at a later date. Hard Disc Companion II uses an efficient compression system to backup as much data as possible onto the floppies without increasing the backup time.

Separate applications are included to restore entire backups or just selected files.

Upgrade to version II

Upgrade from Hard Disc Companion I for only £17.63 plus £2 carriage. Please return original disc to address below.



'Good value for money...A nearly foolproof interface...Hard Disc Companion keeps things simple and as fast as possible...'

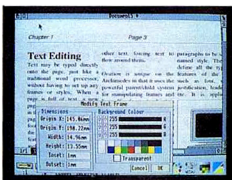
MICRO USER May 92
'...it is certainly the best hard disc backup utility that I have ever used.'

ARCHIVE Apr 92

NEW

Ovation 1.30

Announcing a major new release of the highly acclaimed desktop publisher



Ovation is the easy-to-use desktop publisher used on thousands of sites in education and business across the country. Now, in response to customer feedback, it has been enhanced with many new features, setting even higher standards of quality and value.

Ovation is packed with professional features, yet remains easy-to-learn and instinctive to use. It provides a complete solution for all document generation; from simple single page letters to entire books with diagrams and scanned images.

For the users convenience, Ovation is NOT copy protected.

Upgrade to version 1.30

Upgrade to version 1.30 for just £5 + VAT + £1 carriage (£6.88 inclusive). Please return your original program disc to the address below.

New features

- ☐ Mail merge—Ovation documents may be merged with CSV files generated by databases and other applications
- ☐ Pamphlet printing—scaled and rotated printout for printing booklets with correctly ordered pages
- ☐ Rotated pictures—draw files may be rotated to any angle (also Sprites if you have RISC OS 3.0)
- ☐ 1st Word Plus import—1st Word Plus files may be imported with style information directly into Ovation
- ☐ Thesaurus hotlink—automatic transfer of words between Ovation and latest Desktop Thesaurus (version 1.10)
- ☐ Draft printing—fast draft printing via RISC OS printer drivers
- ☐ System font—easy-to-read non-anti-aliased system font in four weights (medium, bold, italic and bold italic)
- ☐ RISC OS 3.00 compatibility—rotated text in Draw files, 256 grey-level sprites and the desktop boot facility

TypeStudio

The flexible text effects package

TypeStudio is a complete text manipulation package ideal for producing professional quality adverts, posters, banners, logos, letterheads etc.

Drawing tools allow lines and curves to be drawn to create almost any shape, along which text can be flowed. Pairs of lines may be linked to create shapes into which text and Draw files may be moulded.

A range of special effects are available, including: shadow, slant, 3D and mirror.

- Flow text along straight and curved paths
- Mould text and Draw files to shapes
- Wall floor and graduated shadows
- 3-D, mirror, slant and plinth effects
- Save in internal and Draw file format
- Print using RISC OS printer drivers
- Grid and zoom facilities
- Copy, rotate and magnify
- Import Draw files as moulds

The package includes 7 fonts and a 64-page user guide containing many worked examples.

'Of the three (packages), TypeStudio is the most comprehensive. All the tools you are likely to need are included and there is no need to use any other application with it.' ACORN USER May 92



Members price £44.94

Desktop Thesaurus

New, bigger thesaurus with hotlink to Ovation

Desktop Thesaurus now contains over

13,750 keywords and nearly **135,000** synonyms. It is ideal for developing language skills in the office, in school or at home.

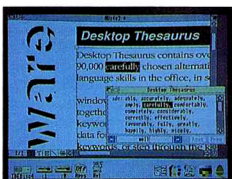
Ideal for use with Ovation, Impression, Pipedit, Edit, 1st Word Plus and other desktop publishers and word processors.

- Synonyms are grouped by noun, verb etc.
- Single click to browse through synonyms
- Data compressed to save disc space
- Chosen synonyms may be transferred instantly to other applications

Upgrade to version 1.10

Upgrade to version 1.10 for just £2 + VAT + £1 carriage (£3.35 inclusive). Please return your original disc to the address below.

'...works both speedily and painlessly. This one is recommended.' ARCHIMED'S WORLD Jul 92



Members price £18.98

RISC
developments

RISC Developments Limited, 117 Hatfield Road, St. Albans, Herts. AL1 4JS. To order, or for more information, call (0727) 40303

All software is suitable for Acorn systems with 1Mb RAM and RISC OS 2.00 or 3.00.

Prices include VAT but please add carriage of £3.10 for Ovation and 1st Word Plus, and £2 for other products (unless stated otherwise).

All prices are for single user versions—site licence prices available on request.

Personal Ads

● R140 with Texan 770+ & Star laserprinter 8 £1500, will split. Philips colour monitor £150, Brother HR15 daisywheel printer £50, A3000 carrying case £15, Computer Concepts ROM module + Interword ROM £30, Parallel printer cable £5, Beebdos, BeebPC & Lisp £15 each. Tel. (0483) 480632.

● PC Emulator 1.7 £60, CC Compression £35, Lemmings £10, Pacmania £5, WS3000 modem V21/22/23, Hayes £60. Tel. 081-698 3772.

● Archimedes 310M colour, two floppy disc drives, Midi Interface, IO Module, Emulator 1.6, lots of software, LC-10 printer, covers, complete with manuals, RISC User mags and packing, mint condition £700 o.n.o. Tel. (0932) 342154.

● Desktop Thesaurus £13, MicroDrive World edition 2 discs manual £12, Speech! superior software £6, MicroDrive £6, Spell! age 5 to 15 £4, IHelp companion disc and book £4, BBC Viewsheet ROM, manuals £5. Reply to: Mr K Martin, Wanscawen House, Prideaux Road, St Blazey-Pa, Cornwall PL24 2SR.

● Archimedes 310, Acorn colour monitor, IFL 2Mb memory board (upgradeable to 4Mb), fitted with RISC OS 2 and MEMC1A, PC Emulator, Euclid, some games and PD, first class condition, original boxes £600, ROM module by Acorn fitted with optional RAM chips £33, Printer driver (EFF) for BJ printers £6. Tel. 051-606 0289.

● Anybody experienced in Wimp, Basic and ARM programming? Would like to exchange ideas and ask the odd question, reply to: Jonathan Montagu, Palace House, Beaulieu, Brockenhurst, Hampshire SO42 7ZN. (Preferably lives in the south of England - though not essential).

● C.C. ROM/RAM module with 64k RAM and battery backup, Interword and Spellmaster ROMs, manuals etc. £45. Tel. (0272) 736237.

● A440 all manuals etc. (excluding VDU), Programmers Reference manual, 1st Word Plus £750 will split. Tel. (0793) 770021 anytime.

● Archimedes 410/1 upgrade with Aleph ARM3, 4Mb RAM, 50Mb hard disc 5.25" floppy interface Acorn colour monitor, Canon 1080A printer, various software £975. Tel. (0342) 714905.

● Z88 Dabs Press books, Z88 Pipedream Guide £10, Z88 Guide £10, Z88 Computing, Ian Sinclair

£4, Acorn DTP unopened £45, 1st Word Plus, release 2 unopened £25, Lemmings £10, Ballerena £6, Square Route £4, Wimp Game £4, Pacmania £8. Tel. (0442) 64003.

● A3000 2Mb serial interface, Atomwide VIDC enhancer and Acorn AKF18 multisync monitor (worth £300 alone) including manuals and software £675. Tel. (0242) 234342 after 6pm.

● A410/1 with 4Mb RAM, 50Mb hard drive and multisync monitor £950. Tel. (0372) 740678.

● Minerva Home Accounts £25, Minerva System Delta Plus database £45, both in original packaging. Tel. (0253) 767987 after 7pm.

● Archimedes 440 colour 4Mb RAM 50Mb hard disc, lots of software including PC Emulator also dot matrix printer and portable Amstrad PC computer with 20Mb hard disc rechargeable batteries and mains lead £1500 the lot, will split. Tel. (0909) 562399.

● A3000, 2Mb RAM, external 5.25" Watford disc drive, Acorn colour monitor plus plinth, Epson LX800 printer, PC Emulator, Impression II, plus Equasor, Presenter II, manuals and other software worth £1300 will split for £850. Tel. 010-353 74 57258 after 6pm (Ireland).

● Archimedes A310, colour monitor, 2-slot backplane, assorted software and all manuals £500, will add Epson LX80 printer and Delta-cat joystick for £550. Tel. (0364) 72437 after 4pm (Devon).

● WANTED: Rhapsody or Rhapsody II, must be original disc (s) complete with manual. Tel. (0628) 474394 eves & weekends.

● Top of the range Archimedes 440 with 40Mb hard disc drive and colour monitor £1250 plus Epson LQ850 24 pin dot matrix printer £250 both with leads and manuals. Tel. (0234) 856870 after 7pm.

● Archimedes and BBC software available with manuals Pipedream 4 £120, 1st Word Plus £35, Easywriter £80, Acorn DTP £50, Ovation 1.3 £60, Desktop Thesaurus £15, Logistix £35, Sigma Sheet £20, Repton 3 £10, plus a wide range of serious games and software for Arc and BBC B computers, please ring for full list. Tel. (0234) 856870.

● BBC A3000 2Mb RAM with Acorn monitor and Pres plinth, 1st Word Plus, Acorn DTP, Lemmings, Pacmania, Break 147, ArcOmnibus, various public

domain demos, games etc. all original manuals etc. £550 o.n.o. Tel. 081-654 3733.

● Archimedes 310 with Aleph One ARM 3 processor and 2Mb RAM, Acorn RGB colour monitor, Pipedream 3, Artisan 2 also Programmers Reference Manual, User Guide and 2 Acorn Applications discs £590 o.n.o. Tel. (0865) 222336.

● A310 with backplane and fan, lots of software £250. Tel. 031-228 2052.

● Have upgraded to multisync so the RGB monitor supplied with my Arc 310 is going cheap to the first person to make out a cheque for £60 to me, no hagglng, buyer collects or pays carriage. Tel. (0328) 864177 after 6.30pm.

● Twin Editor £15, Acorn Desktop Publisher £40, Acorn 1st Word Plus £50, CC Interword (disc) £25, CC Interchart (disc) £15, CC Intersearch (disc) £20, Star Dump (screen dump for Star printers £10, Star LC10 printer cut-sheet feeder £40, CC ROM board with 160k RAM and RFS module £40. Tel. (0255) 253163 (work) or (0255) 813154 (home).

● Z88 computer the ideal portable for BBC and Archimedes users for sale, A4 in size and under 2lb in weight, has Pipedream built in, links easily to Apple Mac and IBM PC as well as Acorn machines, brand new Z88 with 128k RAM and 128k EPROM and case £150, XOB/Tandy portable disc drive for Z88 with XOB disc manager on EPROM £100, CC Spellmaster EPROM £25, PC Link II EPROM £15. Tel. 081-743 5310.

● Minerva Home Accounts £20, Minerva System Delta+ database £35, both in original packaging. Tel. (0253) 767987 after 7pm.

● Archimedes 310 colour system, manuals original boxes, some software £500. Tel. 081-874 0792.

● Acorn A440/1 RISC computer for sale, 15 months old, 4Mb RAM 53Mb hard disc, 3.5" disc drive, colour monitor, excellent for Desktop Publishing, games and educational uses, provided with software and printer utilities £1200 o.n.o. Tel. (0902) 850605.

● Minerva Software: GammaPlot £20, System Delta+ £30, Mailshot £15, Reporter £15, System Delta+ Reference Guide £15, SigmaSheet £20, C.C. ROMs (for CC ROM/RAM module): Interchart £10, Intersearch £15, Interword £15, Spellmaster £20. Tel. (0737) 832159 eves.

Advertisers' Index

Brain Games
Clares Micro Supplies
Colton Software
David Pilling
Members' Offers
Minerva
Norwich Computer Services

70
52
18
13
68
72
48

RISC Developments' Software
RISC User Magazine Disc
RISC User PD Library
RISC User Products
Safesoft Exhibitions
Serious Statistical Software
Subscription Details

64,65
36,37
44
4,29,41,69
71
23
68

Technical Queries ???

Alan Wrigley answers more of your questions.

Dear Sir

We have a network which is shared by both BBC micros and A3000s. We have a large number of Basic programs which were written on the BBC, but when viewed on an Arc in a directory viewer the file icons are blank, and trying to run a program only results in an error. Is there any way to run these programs from the Desktop?

Frank Walton

RISC OS identifies a file as a Basic program by its filetype, and it is the filetype which determines the appearance of the file icon and also the action to be taken when the user tries to run the file (see *Into the Arc*, RISC User 5:3). The filetype is stored as part of a file's catalogue information, but since the concept of filetypes did not apply in the days of the BBC micro, older programs do not have the correct information in their catalogue. In fact, the location of the filetype and the date stamp for Arc files were previously occupied by the load and execution addresses, neither of which is relevant under RISC OS.

There are two ways around this problem. Firstly, if you will only ever be using the programs on an Arc in future you can set the filetypes yourself, using the *SetType command (see the User Guide). The filetype for Basic programs is &FFB. This would be a little tedious for a large number of files as the command will only operate on one file at a time, so a filetype setting program such as *SetType* (RISC User 3:3) will help, since you can drag a selection of files together to the application.

For programs to be shared between the two systems, you could take advantage of the fact that Basic programs on the BBC micro were usually saved with a load address of &FFFF0E00 (Master) or &FFFF1900 (model B). This conveniently means that the filetype bits will be interpreted by the Arc as types &FOE and &F19 respectively. All you then need to do is to include in your boot sequence (or in an Obey file which you run after start-up) the commands to set the run action for these filetypes to the same as that for type &FFB files, as follows:

```
SetMacro Alias$@RunType_F0E <Alias$@RunType_FFB>
```

```
SetMacro Alias$@RunType_F19 <Alias$@RunType_FFB>
```

You would also need to create sprites for the file icons (*file_f0e* and *file_f19*), which you could include in the *!Sprites* file of your boot application. I have used this method successfully myself on a network, but obviously you cannot do so if filetypes &FOE and &F19 are being used for other purposes (at present they do not appear to be used for anything very important).

Dear Sir

When I drag a window scroll bar, only a dotted outline moves and the window is not redrawn until the button is released. However, I have seen a demonstration at a show during which the window was continuously scrolled up and down with the scroll bar. I would find this useful for moving around long text files - is it possible to achieve on my A410?

A.J. Cochrane

This is very simple to achieve on any Archimedes. The way in which the scroll bar affects window redraw is governed by the *WimpFlags* configuration. These flags also determine whether windows can be dragged or resized continuously. The default setting for all the flags is zero, meaning that a drag results in a dotted outline of the window or scroll bar moving with the pointer, with the window only being redrawn when the mouse button is released. By setting various bits, however, you can effect continuous movement. Bit 0 controls window dragging, bit 1 window resizing, bit 2 horizontal scrolling and bit 3 vertical scrolling. So to make the scroll bars display the window contents continuously as you scroll, go to the command line and type:

```
*Configure WimpFlags 12
```

and for continuous window movement and resizing as well, type:

```
*Configure WimpFlags 15
```

You can also set the flags by using the *Configure* application from Acorn's *Application Disc 1*.

The disadvantage of setting the flags is that movement can be slowed down quite significantly if the window being dragged or scrolled, or any window over which it is moved, requires a lot of work to redraw. To demonstrate this, set the flags to 15 as described above, and then drag a window across another which contains a complex Draw file.

RU

SUBSCRIPTION

RISC User is available only on subscription at the rates shown below. Subscribers to RISC User may also take out a reduced rate subscription to BEEBUG (the magazine for the BBC micro and Master series).

Renewal Subscription Rates

UK, BFPO, Ch.Is
Rest of Europe &Eire
Middle East
Americas & Africa
Elsewhere

RISC User

£18.40
£27.50
£33.50
£36.50
£39.50

RISC user & BEEBUG

£28.90
£42.90
£53.10
£58.40
£62.50

Please note that new subscription rates are £1.50 more than renewals.

All subscriptions, including overseas, should be in pounds sterling.

We will also accept payment by Connect, Access, Visa, Switch and official UK orders are welcome.

MAGAZINE DISC

The programs from each issue of RISC User, together with a number of substantial additional items, are included on a monthly 3.5" disc. This is available to order, or you may take out a subscription to ensure that the disc arrives at the same time as the magazine.

Disc Subscription Rates

Six months subscription
Twelve months subscription

UK

£25.50
£50.00

Overseas

£30.00
£56.00

Disc subscriptions include postage, but you should add the appropriate rate (see below) per disc for individual orders.

BACK ISSUES

Last month's special offers on back issue discs and magazines are being maintained. All issues are currently still in stock except Volume 1 Issues 4&5 magazines. All subject to availability. Please include postage when ordering.

	Volume 1	Volume 2	Volume 3	Volume 4	Volume 5
Magazine	£1.00 each	£1.20 each	£1.60 each	£1.90 each	£1.90 each
Disc	£2.00 each	£4.00 each	£4.00 each	£4.75 each	£4.75 each

Post and Packing *

Please add the cost of p&p when ordering. When ordering several items use the highest price code, plus half the price of each subsequent code.

Stock Code	UK, BFPO, Ch.Is	Europe Eire	Americas, Africa Mid East	Elsewhere
a	£1.00	£1.60	£2.40	£2.60
b	£2.00	£3.00	£5.00	£5.50
c	£3.10	£6.50	£10.50	£11.50

* Please use stock code 'a' when ordering magazines and discs

DISCOUNTS ON RISC DEVELOPMENTS PRODUCTS

All RISC Developments software products are available to subscribers at 15% discount (or greater) from the standard retail price as detailed below:

		RRP	Discount Price		RRP	Discount Price
PAOMa	ArcOmnibus Games Disc	14.90	9.95	PGLTb	PolyGlot	19.95 14.95
PASXb	ArcScan III(*)	15.95	12.95	1406a	RISC User Vol. 3 Special Disc	14.90 9.95
PAL1a	ArcScan III Library Disc 1	9.95	7.95	PV4Sa	RISC User Vol. 4 Special Disc	14.90 9.95
PAL2a	ArcScan III Library Disc 2	9.95	7.95	PV5Sa	RISC User Vol. 5 Special Disc	14.90 9.95
O107c	C. Development System	90.93	77.29	O090b	Star/Epson Printer Driver	17.63 14.98
PCHWb	ChartWell	29.95	24.95	O092b	TypeStudio	52.88 44.94
PEDTb	DeskEdit 1.2	24.95	19.95	PWPTb	Wimp Programmer's Toolkit	19.95 14.95
PDA1a	Desktop Applications 1	14.90	9.95			
O095b	HP DeskJet 500C Printer Driver	17.63	14.98			
O096b	Desktop Thesaurus	22.33	18.98			
O094b	Hard Disc Companion	52.88	44.94			
O093c	Hearsay II	88.13	74.91			
O108c	Ovation	116.33	98.88			
O097b	Playback	22.33	18.98			

Hardware

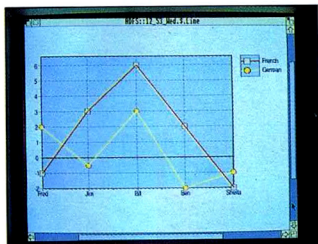
All RISC Developments hardware products covering Disc Interfaces, IDE Hard Disc Drives, Scanners, Memory and Processor upgrades are available to subscribers at a standard 5% discount from the standard retail prices.

All prices listed above include VAT but do not include post & packing. If in doubt please check by phone when placing your order.

ChartWell

Version 1.1

A sophisticated Graph and Chart Package which now offers new features.

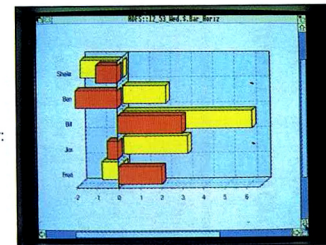


ChartWell offers **24 different graph types** :

- horizontal and vertical bar charts
- line graphs
- scatter charts
- polar plots
- pie charts

...and gives you **complete user control** over:

- choice of colour
- graduated and shaded backgrounds
- data point styles
- bar widths and spacing
- use of titles and labels
- legends to provide a key
- scales and tick marks, etc.



Data can be imported from other applications, such as spreadsheets, databases, or created with a suitable editor as a text file.

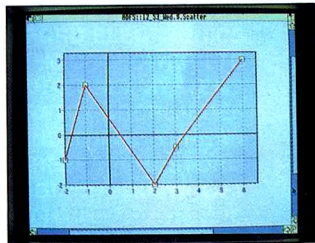
Output is in standard Draw format for import into Draw or any other application, DTP for example.



ChartWell offers a variety of **display options** :

- flat or 3D bar and pie charts
- user choice of angle for 3D pie chart display
- clustered, stacked or layered bar charts
- scatter graphs with choice of curve fitting techniques, regression lines and correlation coefficients, and use of error bars
- line graphs with choice of normal, cumulative area or stacked area displays.

ChartWell's **flexibility** allows you to select only part of the data for display. You can also change the order of display - a useful feature when creating bar charts - data can be arranged in ascending order so long bars will not overlap shorter ones.

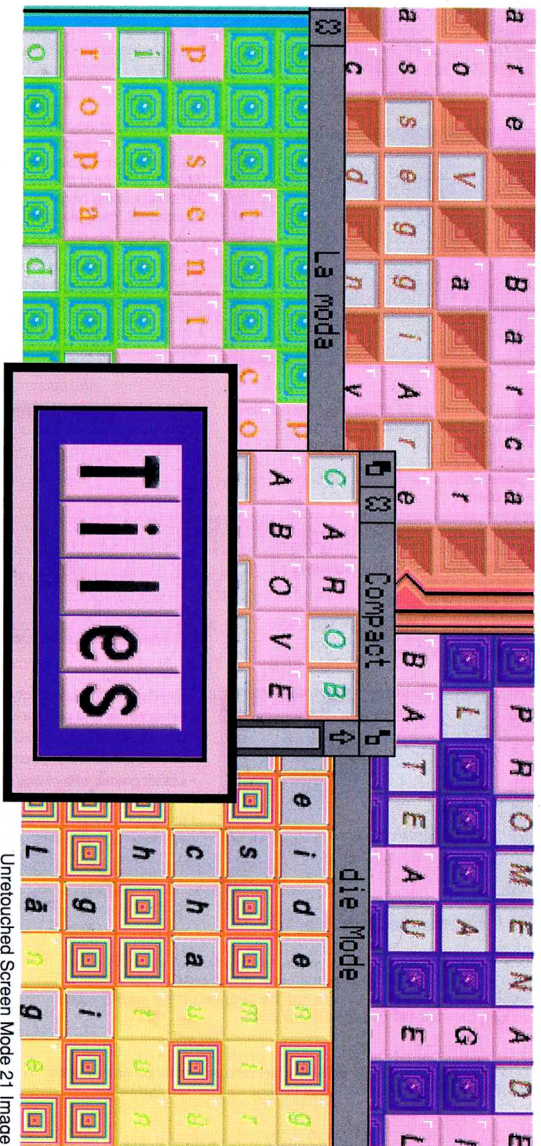


Use of 'STYLE SHEETS' allows a set of options to be saved with data for future reference. User choice of start-up options.

Chartwell V.1.1 and manual are available to members at £29.95 inc + £2 p&p. Code PCHWa

Version 1.1 of ChartWell is available free of charge to existing users - send the original disc and a SAE marked **ChartWell Upgrade to:**

RISC Developments Ltd. 117 Hatfield Road, St Albans, Herts AL1 4JS Tel: 0727 40303 Fax: 0727 860263



Unretouched Screen Mode 21 Image

A fully featured Crossword Game for Europe

- * Risc OS & Risc OS Style compliant
- * Multi tasks under the WIMP manager
- * Interacts with the Help application
- * 6 sets of sprites to optimise display
- * Up to 7 different patterns per sprite set
- * Generates sprites from user's fonts
- * Includes 20 boards in 5 languages
- * Boards for different levels of ability
- * Skills taught: strategy, vocabulary, spelling
- * Up to 4 players play using mouse only
- * User specifies players, rules, display
- * Configuration may be saved

* 50 page manual + 3½" disc

**RETAIL
PRICE
£19.75**

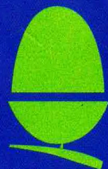
Please allow
28 days for
delivery

Obtainable from Brain Games, P.O. Box 14, Hessele, N.Humberside, HU13 9VY Telephone 0482 649288

BBC OCTOBER 16-18

ACORN USER

The 1992 SHOW



Opening Times :-

WEMBLEY EXHIBITION CENTRE

October 16th to 18th 1992

Friday 16th October - 10.00 am to 6.00 pm
Saturday 17th October - 10.00 am to 6.00 pm
Sunday 18th October - 10.00 am to 5.00 pm

**The Main Event of 1992 for the
Acorn Computer World**

ACORN COMPUTERS BBC ACORN USER MAGAZINE
EDUCATIONAL COMPUTING TDK (UK) LTD COMPUTER
CONCEPTS/WILD VISION LEADING EDGE LONGMAN LOGOTRON
COLTON SOFTWARE BEEBUG LTD LINDIS INTERNATIONAL
NORWICH COMPUTER SERVICES ACE COMPUTING MICRO-AID
HS SOFTWARE CAMBRIDGE INTERNATIONAL SOFTWARE
DIGITAL SERVICES MD OFFICE SUPPLIES CAMBRIDGE
SOFTWARE HOUSE ELECTRONIC FONT FOUNDRY ICON
TECHNOLOGY P.R.E.S. LTD MORLEY ELECTRONICS LTD
MILLIPEDE ELECTRONIC GRAPHICS SPACETECH S J RESEARCH
CALLIGRAPH LTD/IRLAM INSTRUMENTS KENDAL COMPUTER
CENTRE WESERVE ESM THE SERIAL PORT ALEPH
ONE/ATOMWIDE IFEL MINERVA SOFTWARE THE FOURTH
DIMENSION SNAP COMPUTER SUPPLIES OREGAN SOFTWARE
DEVELOPMENTS ADVANCED COMPUTER SERVICES CLARES
AVP COMPUTING TOPOLOGIKA APRICOTE STUDIOS ORION
COMPUTERS TECHSOFT UK LTD SHERSTON SOFTWARE IOTA
DESKTOP PROJECTS LTD RESOURCE WATFORD ELECTRONICS
ARCHIMEDES WORLD KRISALIS SOFTWARE MICROPOWER LTD
MICRO USER MAGAZINE THE DATA STORE INTEGRIX SYSTEMS
LTD 4MATION VIDEK LTD CJE MICROS PARATEX ARCHIMEDES
DEVELOPMENT KLEIN COMPUTERS PEN AND THINK TURCAN
RESEARCH SYSTEMS LTD ELECTROMUSIC RESEARCH STORM
SOFTWARE GROUND CONTROL ELECTRONICS MEWSOFT
DYAD LTD EXPLAN UK LTD PALETTE STUDIO DD
INTERNATIONAL SOFTWARE 42 WYDDFA SOFTWARE ACORN

FOR FURTHER DETAILS
OR TICKETS (VISA AND MASTERCARD HOLDERS) PHONE

0737 814713

ANCESTRY

Full Ancestors, Descendants and user defined reports. Zoom in on a card containing extra data. Facility to add your own file with more details. Prints family trees sideways in traditional layout. Comprehensive searching facility. Imports digitised or scanned pictures.

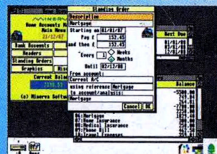
£69.00



HOME ACCOUNTS

Full control of bank/building society accounts inc. credit cards. Caters for standing orders Bank reconciliation, warning indicators when limits are exceeded. Facility to categorize outgoings as required allowing a full breakdown of costs.

£39.00



ATELIER

A sophisticated art package allowing stunning graphics to be created. Anti-alias squashing, rotation of areas into any quadrangle, sprite and brush patterning, map images onto any definable 3D surface. Smoothing brush and other useful digitised picture tools.

£85.00



PRIMEART

An art package with on-line help designed for use with Primary and Special Needs Children. Menus can be tailored for a particular class or child. Sprites can be imported and used to paint, or produce stunning tiling effects, Poster size prints available.

£79.95



GAMES

Send for our separate leaflet listing 17 games. Priced at £9.99 and £12.99 inc VAT they represent great value for money.

All prices ex. VAT



MINERVA
SOFTWARE

MINERVA HOUSE, BARING CRESCENT, EXETER, EX1 1TL
Tel. (0392) 437756 Fax. (0392) 421762

LEISURE